

## INHALATION DELIVERY METHODS

### MÜV Premium Cannabis Flower (1.0 g or 3.5 g)

**DOSING:** Use as specified by licensed recommending physician. One package contains a total of 1.0 g or 3.5 g cannabis flower. The flower generally has total cannabinoid potency between 15-30% by weight but will vary from strain to strain. The total THC and CBD content per package is displayed on the batch sticker.

**INACTIVE INGREDIENTS:** None

**INTRODUCTION:** This pamphlet provides a summary of information about MÜV Premium Cannabis Flower. Please read this pamphlet thoroughly and keep it with your medicine. If you have any questions, please consult your physician.

MÜV Premium Cannabis Flower originates from *Cannabis* spp. plants meticulously grown without the use of harmful pesticides and contains approximately 15-30% total cannabinoids by weight.

**IMPORTANT:** Your physician has recommended this medication for your use only. **DO NOT LET ANYONE ELSE USE IT. KEEP THIS MEDICINE OUT OF THE REACH OF CHILDREN AND PETS.**

If a child puts contents on skin, eyes, or in mouth, remove immediately and contact a poison control center. Do not drive a car or operate heavy machinery until you know how this medication affects you. While taking this medication, do not drink alcohol or take other drugs that have an effect on the central nervous system, such as antidepressants or sleep aids.

Unless advised by your physician, do not use this drug if you are pregnant or nursing.

**CLINICAL PHARMACOLOGY:** The endocannabinoid system is a series of receptors located throughout the body, which control important biological functions. Your body produces its own endocannabinoids, and cannabinoids like  $\Delta^9$ -tetrahydrocannabinol (THC) and cannabidiol (CBD) engage these receptors to produce various effects that can promote symptom relief. THC is an agonist of the CB<sub>1</sub> receptor located throughout the central nervous system (CNS) and brain. For this reason, THC is known as the psychoactive cannabinoid, which can produce euphoria or the “high” commonly associated with cannabis use. CBD works indirectly, as an antagonist, on the CB<sub>1</sub> and CB<sub>2</sub> receptors by interacting with other receptors to disrupt endocannabinoid function and binding. Because of its unique mode of action, CBD is non-psychoactive and can even reduce the side effects of THC.

Inhalation provides one of the quickest onset times of all dosing methods by delivering cannabinoids directly to the lungs, and subsequently the bloodstream. Little degradation takes place in the body, like metabolism in the liver to 11-hydroxy THC, which makes inhalation an excellent way to titrate dosing. MÜV Premium Cannabis Flower contains no ingredients other than trimmed flower grown to standards set by Florida Department of Health Rule 64-4.013. Common effects of THC include euphoria, relaxation, sedation, increased appetite, and nausea reduction while side effects can include decreased blood pressure, anxiety, or paranoia. Lethal overdose has never been reported with THC or cannabis use.

Due to CB<sub>1</sub> activity in the cerebral cortex, hypothalamus, and other regions of the brain and spinal cord, THC can regulate neurological pain reception. THC has been shown to be effective as conventional opiate treatments for pain reduction and analgesia (Noyes et al. 1975; Maurer et al. 1990; Hosking and Zajicek, 2008). Clinical evidence has also shown THC to be effective in pain management and muscle spasticity/spasms especially in multiple sclerosis (MS) and other chronic pain conditions (Darmani, 2001; De Petrocellis et al. 2000). Clinical data has also proven THC to be effective for appetite stimulation in patients with human immunodeficiency virus (HIV) and acquired immune deficiency syndrome (AIDS). Additionally, THC acts as an anti-emetic and stimulates appetite for cancer patients undergoing chemotherapy treatments. CBD has anti-anxiety and anti-depressant effects (de Mello Schier et al. 2014); these indications have also been corroborated with social anxiety disorders (Bergamaschi et al. 2011) and THC-induced psychosis (Zuardi et al. 1982; Bhattacharyya et al. 2010).

Sleep is an important aspect of palliative care and quality of life; and anandamide, a naturally occurring human endocannabinoid, has been shown to illicit sleep responses and improve REM sleep (Murillo-Rodriguez et al. 1998). Anandamide activates CB<sub>1</sub> receptors, and similarly, THC significantly decreases the time it takes to fall asleep, and once asleep THC led to fewer awakenings during the first half of the night (Cousens and DiMascio, 1973; Nicholson et al. 2004).

**INDICATIONS AND USE:** MÜV Premium Cannabis Flower is ideally used for a fast acting, potent treatment option. Conditions for use include: cancer, glaucoma, HIV and AIDS, MS, hepatitis C, amyotrophic lateral sclerosis (ALS), Crohn's disease, Parkinson's disease, or any other debilitating medical condition that a physician believes would outweigh the potential risks for a patient. It can also be used as a palliative care treatment due to its improvements on general outlook including pain, spasticity, weight loss, anxiety, and sleep promotion.

**DOSAGE AND ADMINISTRATION:** When starting a new dosing regimen, it is crucially important that medication is administered in small doses (known as titrating) to determine an effective dose and to minimize side effects. Patients with little or no prior cannabis experience should be particularly careful. It is best to start one inhalation or “puff” at first to know how this product will affect you before increasing the dose.

MÜV Premium Cannabis Flower is packaged in a tamper evident pouch, once opened the pouch can be resealed using the zip enclosure. MÜV Premium Cannabis Flower can be used for inhalation as recommended by your physician.

**CONTRAINDICATIONS:** Patients known to be allergic to cannabis should not use cannabis products.

Relative contraindications include: coronary heart diseases, hypotension, drug abuse, alcohol abuse, mania, depression, bipolar, schizophrenia, or a prior negative reaction to cannabis.

**WARNINGS AND PRECAUTIONS:** Be sure to notify your physician if you have any of the following:

- Have or had history of heart disorders because of occasional low blood pressure, high blood pressure, rapid heart rate, palpitations, or fainting;
- Present or past issues with drug abuse;
- Present or past issues with alcohol abuse;
- Have or had mental health problems (depression, mania, bipolar, or schizophrenia);
- Present or past history of epilepsy, seizure disorders, and/or seizure-like activity;
- Have any allergies to drugs;
- Are pregnant or nursing, or intend to become pregnant.

If you become pregnant while taking any MÜV cannabis-infused product, stop using immediately and consult with your physician.

MÜV Premium Cannabis Flower should be used with caution, particularly with children and elderly patients, as there are few studies in these patient populations. A physician should monitor children under the age of 18 closely as THC can have adverse effects on brain development.

When consulting with your physician, please include all current medications (both prescription and non-prescription) as MÜV Premium Cannabis Flower can theoretically interact with other drug therapies. Avoid grapefruit or grapefruit juice and other CYP450 inhibitors as these can adversely affect THC treatments. Adverse reactions could also occur with alcohol and other drugs that affect the CNS (such as Valium, Librium, Xanax, Seconal, Nembutal, or Phenobarbital).

**ADVERSE REACTIONS:** Tell your physician if any symptoms persist or worsen with time:

- Cardiovascular: palpitations, tachycardia, vasodilation, hypotension (low blood pressure);
- Digestive: dry mouth, abdominal pain, nausea, vomiting, diarrhea, constipation, anorexia, excessive appetite, hepatic enzyme elevation;
- Nervous System: euphoria, drowsiness, memory loss, confusion, anxiety, paranoia, depersonalization, hallucinations, poor balance,

dizziness, somnolence, nightmares, depression, difficulty speaking;

- Musculoskeletal: myalgias;
- Skin: flushing, sweating, irritation;
- Ocular: conjunctivitis, impaired vision, irritation;
- Body: chills, headache, fatigue;
- Respiratory: cough, rhinitis, sinusitis.

### MÜV Flower Cups (3.5 gram)

**DOSE:** 1 Flower Cup Containing ~1.2 g Trimmed Flower  
**TOTAL PRODUCT DOSES:** 1 Flower Cup contains a total of approximately 240 mg THC and <25 mg CBD, with approximately 18, 5-second inhalations per 1.2 g  
**INACTIVE INGREDIENTS:** None

**INTRODUCTION:** This pamphlet provides a summary of information about MÜV Flower Cups and the MÜV Vaporizer. Please read this pamphlet thoroughly and keep it with your medicine. If you have any questions, please consult your physician.

MÜV Flower Cups contains approximately 720 mg  $\Delta^9$ -tetrahydrocannabinol (THC) and <75 mg cannabidiol (CBD) extracted from *Cannabis* spp. plants meticulously grown without the use of harmful pesticides.

**IMPORTANT:** Your physician has recommended this medication for your use only. **DO NOT LET ANYONE ELSE USE IT. KEEP THIS MEDICINE OUT OF THE REACH OF CHILDREN AND PETS.**

If a child puts contents on skin or in mouth, remove immediately and contact a poison control center. Do not drive a car or operate heavy machinery until you know how this medication affects you. While taking this medication, do not drink alcohol or take other drugs that have an effect on the central nervous system, such as antidepressants or sleep aids.

Unless advised by your physician, do not use this drug if you are pregnant or nursing.

**CLINICAL PHARMACOLOGY:** The endocannabinoid system is a series of receptors located throughout the body, which control important biological functions. Your body produces its own endocannabinoids, and cannabinoids like  $\Delta^9$ -tetrahydrocannabinol (THC) and cannabidiol (CBD) engage these receptors to produce various effects that can promote symptom relief. THC is an agonist of the CB<sub>1</sub> receptor located throughout the central nervous system (CNS) and brain. For this reason, THC is known as the psychoactive cannabinoid, which can produce euphoria or the “high” commonly associated with cannabis use. CBD works indirectly, as an antagonist, on the CB<sub>1</sub> and CB<sub>2</sub> receptors by interacting with other receptors to disrupt endocannabinoid function and binding. Because of its unique mode of action, CBD is non-psychoactive and can even reduce the side effects of THC.

Inhalation provides one of the quickest onset times of all dosing methods by delivering cannabinoids directly to the lungs, and subsequently the bloodstream. Little degradation takes place in the body, like metabolism in the liver to 11-hydroxy THC, which makes inhalation (and vaporizing) an excellent way to titrate dosing. MÜV Flower Cups contain no ingredients other than trimmed flower grown to standards set by Florida Department of Health Rule 64-4.013. Vaporization limits toxic byproducts accompanied by combustion and smoking. Common effects of THC include euphoria, relaxation, sedation, increased appetite, and nausea reduction while side effects can include decreased blood pressure, anxiety, or paranoia. Lethal overdose has never been reported with THC or cannabis use.

Due to CB<sub>1</sub> activity in the cerebral cortex, hypothalamus, and other regions of the brain and spinal cord, THC can regulate neurological pain reception. THC has been shown to be effective as conventional opiate treatments for pain reduction and analgesia (Noyes et al. 1975; Maurer et al. 1990; Hosking and Zajicek, 2008). Clinical evidence has also shown THC to be effective in pain management and muscle spasticity/spasms especially in multiple sclerosis (MS) and other chronic pain conditions (Darmani, 2001; De Petrocellis et al. 2000). Clinical data has also proven THC to be effective for appetite stimulation in patients with human immunodeficiency virus (HIV) and acquired immune deficiency syndrome (AIDS). Additionally, THC acts as an anti-emetic and stimulates appetite for cancer patients

undergoing chemotherapy treatments. CBD has anti-anxiety and anti-depressant effects (de Mello Schier et al. 2014); these indications have also been corroborated with social anxiety disorders (Bergamaschi et al. 2011) and THC-induced psychosis (Zuardi et al. 1982; Bhattacharyya et al. 2010).

Sleep is an important aspect of palliative care and quality of life; and anandamide, a naturally occurring human endocannabinoid, has been shown to illicit sleep responses and improve REM sleep (Murillo-Rodriguez et al. 1998). Anandamide activates CB<sub>1</sub> receptors, and similarly, THC significantly decreases the time it takes to fall asleep, and once asleep THC led to fewer awakenings during the first half of the night (Cousens and DiMascio, 1973; Nicholson et al. 2004).

**INDICATIONS AND USE:** MÜV Flower Cups are ideally used for a fast acting, potent treatment option. Conditions for use include: cancer, glaucoma, HIV and AIDS, MS, hepatitis C, amyotrophic lateral sclerosis (ALS), Crohn's disease, Parkinson's disease, or any other debilitating medical condition that a physician believes would outweigh the potential risks for a patient. It can also be used as a palliative care treatment due to its improvements on general outlook including pain, spasticity, weight loss, anxiety, and sleep promotion.

**DOSAGE AND ADMINISTRATION:** When starting a new dosing regimen it is crucially important that medication is administered in small doses (known as titrating) to determine an effective dose and to minimize side effects. Patients with little or no prior cannabis experience should be particularly careful. It is best to start one inhalation from the vapor balloon at first to know how this product will affect you before increasing the dose.

One Flower Cup contains 1.2 g of trimmed flower contained within a tamper-evident vessel, please do not attempt to open or break the vessel. The Easy Valve will be assembled with the Flower Cup as noted in the MÜV Vaporizer instruction manual with the metal cap directly on the heating surface of the Vaporizer. Turn the vaporizer on to a temperature of '6' to start out, and allow the Vaporizer to preheat for approximately 5 minutes. The 'CONTROL' light will turn on signaling the user to attach the balloon to the Easy Valve and turn on the 'AIR' to inflate the balloon with vapor. Before the balloon becomes fully inflated, turn off the 'AIR' and remove the balloon and attach the mouthpiece to begin dosing. Each balloon contains approximately six inhalations, and each Flower Cup can inflate three balloons.

**CONTRAINDICATIONS:** Patients known to be allergic to cannabis should not use cannabis products.

Relative contraindications include: coronary heart diseases, hypotension, drug abuse, alcohol abuse, mania, depression, bipolar, schizophrenia, or a prior negative reaction to cannabis.

**WARNINGS AND PRECAUTIONS:** Be sure to notify your physician if you have any of the following:

- Have or had history of heart disorders because of occasional low blood pressure, high blood pressure, rapid heart rate, palpitations, or fainting;
- Present or past issues with drug abuse;
- Present or past issues with alcohol abuse;
- Have or had mental health problems (depression, mania, bipolar, or schizophrenia);
- Present or past history of epilepsy, seizure disorders, and/or seizure-like activity;
- Have any allergies to drugs;
- Are pregnant or nursing, or intend to become pregnant.

If you become pregnant while taking any MÜV cannabis-infused product, stop using immediately and consult with your physician.

MÜV Flower Cups should be used with caution, particularly with children and elderly patients, as there are few studies in these patient populations. A physician should monitor children under the age of 18 closely as THC can have adverse effects on brain development.

When consulting with your physician, please include all current medications (both prescription and non-prescription) as MÜV Flower Cups can theoretically interact with other drug therapies. Avoid grapefruit or grapefruit

juice and other CYP450 inhibitors as these can adversely affect THC treatments. Adverse reactions could also occur with alcohol and other drugs that affect the CNS (such as Valium, Librium, Xanax, Seconal, Nembutal, or Phenobarbital).

**ADVERSE REACTIONS:** Tell your physician if any symptoms persist or worsen with time:

- Cardiovascular: palpitations, tachycardia, vasodilation, hypotension (low blood pressure);
- Digestive: dry mouth, abdominal pain, nausea, vomiting, diarrhea, constipation, anorexia, excessive appetite, hepatic enzyme elevation;
- Nervous System: euphoria, drowsiness, memory loss, confusion, anxiety, paranoia, depersonalization, hallucinations, poor balance, dizziness, somnolence, nightmares, depression, difficulty speaking;
- Musculoskeletal: myalgia;
- Skin: flushing, sweating, irritation;
- Ocular: conjunctivitis, impaired vision, irritation;
- Body: chills, headache, fatigue;
- Respiratory: cough, rhinitis, sinusitis.

### MÜV Disposable Vape Pens (300 mg)

**DOSE:** 2.1 mg per 3-second inhalation  
**TOTAL PRODUCT DOSES:** 1 cartridge contains a total of 210 mg THC and <10 mg CBD, with ~100 total doses per cartridge  
**INACTIVE INGREDIENTS:** None

**INTRODUCTION:** This pamphlet provides a summary of information about MÜV Disposable Vape Pens. Please read this pamphlet thoroughly and keep it with your medicine. If you have any questions, please consult your physician.

MÜV Disposable Vape Pens contain 210 mg Δ<sup>9</sup>-tetrahydrocannabinol (THC) and <25 mg cannabidiol (CBD) extracted from a single batch of *Cannabis* spp. plants meticulously grown without the use of harmful pesticides.

**IMPORTANT:** Your physician has recommended this medication for your use only. DO NOT LET ANYONE ELSE USE IT. KEEP THIS MEDICINE OUT OF THE REACH OF CHILDREN AND PETS.

If a child puts cartridge contents on skin or in mouth, remove immediately and contact a poison control center. Do not drive a car or operate heavy machinery until you know how this medication affects you. While taking this medication, do not drink alcohol or take other drugs that have an effect on the central nervous system, such as antidepressants or sleep aids.

Unless advised by your physician, do not use this drug if you are pregnant or nursing.

**CLINICAL PHARMACOLOGY:** The endocannabinoid system is a series of receptors located throughout the body, which control important biological functions. Your body produces its own endocannabinoids, and cannabinoids like Δ<sup>9</sup>-tetrahydrocannabinol (THC) and cannabidiol (CBD) engage these receptors to produce various effects that can promote symptom relief. THC is an agonist of the CB<sub>1</sub> receptor located throughout the central nervous system (CNS) and brain. For this reason, THC is known as the psychoactive cannabinoid, which can produce euphoria or the "high" commonly associated with cannabis use. CBD works indirectly, as an antagonist, on the CB<sub>1</sub> and CB<sub>2</sub> receptors by interacting with other receptors to disrupt endocannabinoid function and binding. Because of its unique mode of action, CBD is non-psychoactive and can even reduce the side effects of THC.

Inhalation provides one of the quickest onset times of all dosing methods by delivering cannabinoids directly to the lungs, and subsequently the bloodstream. Little degradation takes place in the body, like metabolism in the liver to 11-hydroxy THC, which makes inhalation (and vaping) an excellent way to titrate dosing. MÜV Disposable Vape Pens contain no ingredients other than natural, plant-derived compounds and vaporization limits toxic byproducts accompanied by combustion and smoking. Common effects of THC include euphoria, relaxation, sedation, increased appetite, and nausea reduction while side effects can include decreased blood pressure, anxiety, or paranoia.

Lethal overdose has never been reported with THC or cannabis use.

Due to CB<sub>1</sub> activity in the cerebral cortex, hypothalamus, and other regions of the brain and spinal cord, THC can regulate neurological pain reception. THC has been shown to be effective as conventional opiate treatments for pain reduction and analgesia (Noyes et al. 1975; Maurer et al. 1990; Hosking and Zajicek, 2008). Clinical evidence has also shown THC to be effective in pain management and muscle spasticity/spasms especially in multiple sclerosis (MS) and other chronic pain conditions (Darmani, 2001; De Petrocellis et al. 2000). Clinical data has also proven THC to be effective for appetite stimulation in patients with human immunodeficiency virus (HIV) and acquired immune deficiency syndrome (AIDS). Additionally, THC acts as an anti-emetic and stimulates appetite for cancer patients undergoing chemotherapy treatments. CBD has anti-anxiety and anti-depressant effects (de Mello Schier et al. 2014); these indications have also been corroborated with social anxiety disorders (Bergamaschi et al. 2011) and THC-induced psychosis (Zuardi et al. 1982; Bhattacharyya et al. 2010).

Sleep is an important aspect of palliative care and quality of life; and anandamide, a naturally occurring human endocannabinoid, has been shown to illicit sleep responses and improve REM sleep (Murillo-Rodriguez et al. 1998). Anandamide activates CB<sub>1</sub> receptors, and similarly, THC significantly decreases the time it takes to fall asleep, and once asleep THC led to fewer awakenings during the first half of the night (Cousens and DiMascio, 1973; Nicholson et al. 2004).

**INDICATIONS AND USE:** MÜV Disposable Vape Pens are ideally used for a fast acting, potent treatment option. Conditions for use include: cancer, glaucoma, HIV and AIDS, MS, hepatitis C, amyotrophic lateral sclerosis (ALS), Crohn's disease, Parkinson's disease, or any other debilitating medical condition that a physician believes would outweigh the potential risks for a patient. It can also be used as a palliative care treatment due to its improvements on general outlook including pain, spasticity, weight loss, anxiety, and sleep promotion.

**DOSAGE AND ADMINISTRATION:** When starting a new dosing regimen, it is crucially important that medication is administered in small doses (known as titrating) to determine an effective dose and to minimize side effects. Patients with little or no prior cannabis experience should be particularly careful. It is best to start with one 3-second inhalation at first to know how this product will affect you before increasing the dose.

To use your MÜV Disposable Vape Pen, just take it out of box and inhale slowly from the mouthpiece. The battery and cartridge are disposable so when the oil is gone, throw the assembly away. The onset time is usually less than 15 minutes and the effects are felt from 1-4 hours, depending on tolerance and dose amount.

**CONTRAINDICATIONS:** Patients known to be allergic to cannabis should not use cannabis products.

Relative contraindications include: coronary heart diseases, hypotension, drug abuse, alcohol abuse, mania, depression, bipolar, schizophrenia, or a prior negative reaction to cannabis.

**WARNINGS AND PRECAUTIONS:** Be sure to notify your physician if you have any of the following:

- Have or had history of heart disorders because of occasional low blood pressure, high blood pressure, rapid heart rate, palpitations, or fainting;
- Present or past issues with drug abuse;
- Present or past issues with alcohol abuse;
- Have or had mental health problems (depression, mania, bipolar, or schizophrenia);
- Present or past history of epilepsy, seizure disorders, and/or seizure-like activity;
- Have any allergies to drugs;
- Are pregnant or nursing, or intend to become pregnant.

If you become pregnant while taking any MÜV cannabis-infused product, stop using immediately and consult with your physician.

MÜV Disposable Vape Pens should be used with caution, particularly with children and elderly patients, as there are

few studies in these patient populations. A physician should monitor children under the age of 18 closely as THC can have adverse effects on brain development.

When consulting with your physician, please include all current medications (both prescription and non-prescription) as MUV Disposable Vape Pens can theoretically interact with other drug therapies. Avoid grapefruit or grapefruit juice and other CYP450 inhibitors as these can adversely affect THC treatments. Adverse reactions could also occur with alcohol and other drugs that affect the CNS (such as Valium, Librium, Xanax, Seconal, Nembutal, or Phenobarbital).

**ADVERSE REACTIONS:** Tell your physician if any symptoms persist or worsen with time:

- Cardiovascular: palpitations, tachycardia, vasodilation, hypotension (low blood pressure);
- Digestive: dry mouth, abdominal pain, nausea, vomiting, diarrhea, constipation, anorexia, excessive appetite, hepatic enzyme elevation;
- Nervous System: euphoria, drowsiness, memory loss, confusion, anxiety, paranoia, depersonalization, hallucinations, poor balance, dizziness, somnolence, nightmares, depression, difficulty speaking;
- Musculoskeletal: myalgias;
- Skin: flushing, sweating, irritation;
- Ocular: conjunctivitis, impaired vision, irritation;
- Body: chills, headache, fatigue;
- Respiratory: cough, rhinitis, sinusitis.

### **MUV Plus Vape Pens (500mg) Strain-Specific**

**TOTAL PRODUCT DOSES:** 1 cartridge contains a total of 400 mg THC and <12.5 mg CBD, with ~167 total doses per cartridge

**DOSE:** 3 mg per 3-second inhalation  
**INACTIVE INGREDIENTS:** Cannabis-Derived Terpenes

**INTRODUCTION:** This pamphlet provides a summary of information about MUV Plus Vape Pens. Please read this pamphlet thoroughly and keep it with your medicine. If you have any questions, please consult your physician.

MUV Plus Vape Pens contain Δ9-tetrahydrocannabinol (THC) and cannabidiol (CBD) extracted and distilled from *Cannabis* spp. plants meticulously grown without the use of harmful pesticides.

**IMPORTANT:** Your physician has recommended this medication for your use only. **DO NOT LET ANYONE ELSE USE IT. KEEP THIS MEDICINE OUT OF THE REACH OF CHILDREN AND PETS.**

If a child puts cartridge contents on skin or in mouth, remove immediately and contact a poison control center. Do not drive a car or operate heavy machinery until you know how this medication affects you. While taking this medication, do not drink alcohol or take other drugs that have an effect on the central nervous system, such as antidepressants or sleep aids.

Unless advised by your physician, do not use this drug if you are pregnant or nursing.

**CLINICAL PHARMACOLOGY:** The endocannabinoid system is a series of receptors located throughout the body, which control important biological functions. Your body produces its own endocannabinoids, and cannabinoids like Δ9-tetrahydrocannabinol (THC) and cannabidiol (CBD) engage these receptors to produce various effects that can promote symptom relief. THC is an agonist of the CB<sub>1</sub> receptor located throughout the central nervous system (CNS) and brain. For this reason, THC is known as the psychoactive cannabinoid, which can produce euphoria or the “high” commonly associated with cannabis use. CBD works indirectly, as an antagonist, on the CB<sub>1</sub> and CB<sub>2</sub> receptors by interacting with other receptors to disrupt endocannabinoid function and binding. Because of its unique mode of action, CBD is non-psychoactive and can even reduce the side effects of THC.

Inhalation provides one of the quickest onset times of all dosing methods by delivering cannabinoids directly to the lungs, and subsequently the bloodstream. Little degradation takes place in the body, like metabolism in the liver to 11-hydroxy THC, which makes inhalation (and vaping) an excellent way to titrate dosing. MUV PÜRE Vape Pens

contain no ingredients other than cannabis derived and all natural botanical terpenes. Vaporization limits toxic byproducts accompanied by combustion and smoking. Common effects of THC include euphoria, relaxation, sedation, increased appetite, and nausea reduction while side effects can include decreased blood pressure, anxiety, or paranoia. Lethal overdose has never been reported with THC or cannabis use.

Due to CB<sub>1</sub> activity in the cerebral cortex, hypothalamus, and other regions of the brain and spinal cord, THC can regulate neurological pain reception. THC has been shown to be effective as conventional opiate treatments for pain reduction and analgesia (Noyes et al. 1975; Maurer et al. 1990; Hosking and Zajicek, 2008). Clinical evidence has also shown THC to be effective in pain management and muscle spasticity/spasms especially in multiple sclerosis (MS) and other chronic pain conditions (Darmani, 2001; De Petrocellis et al. 2000). Clinical data has also proven THC to be effective for appetite stimulation in patients with human immunodeficiency virus (HIV) and acquired immune deficiency syndrome (AIDS). Additionally, THC acts as an anti-emetic and stimulates appetite for cancer patients undergoing chemotherapy treatments. CBD has anti-anxiety and anti-depressant effects (de Mello Schier et al. 2014); these indications have also been corroborated with social anxiety disorders (Bergamaschi et al. 2011) and THC-induced psychosis (Zuardi et al. 1982; Bhattacharyya et al. 2010).

Sleep is an important aspect of palliative care and quality of life; and anandamide, a naturally occurring human endocannabinoid, has been shown to illicit sleep responses and improve REM sleep (Murillo-Rodriguez et al. 1998). Anandamide activates CB<sub>1</sub> receptors, and similarly, THC significantly decreases the time it takes to fall asleep, and once asleep THC led to fewer awakenings during the first half of the night (Cousens and DiMascio, 1973; Nicholson et al. 2004).

**INDICATIONS AND USE:** MUV Plus Vape Pens are ideally used for a fast acting, potent treatment option. Conditions for use include: cancer, glaucoma, HIV and AIDS, MS, hepatitis C, amyotrophic lateral sclerosis (ALS), Crohn’s disease, Parkinson’s disease, or any other debilitating medical condition that a physician believes would outweigh the potential risks for a patient. It can also be used as a palliative care treatment due to its improvements on general outlook including pain, spasticity, weight loss, anxiety, and sleep promotion.

**DOSAGE AND ADMINISTRATION:** When starting a new dosing regimen, it is crucially important that medication is administered in small doses (known as titrating) to determine an effective dose and to minimize side effects. Patients with little or no prior cannabis experience should be particularly careful. It is best to start with one 3-second inhalation at first to know how this product will affect you before increasing the dose.

To use your MUV Plus Vape Pen, screw the threaded end of the cartridge into the battery. The connection should be snug but not over tightened; unscrewing the cartridge a ¼ turn from snugness can create a better functioning connection. Press the button on the MUV battery 5 times to turn battery on/off. Press the button 2 times to activate the ‘preheat function,’ this provides 10 seconds of low heat to warm the oil prior to vaping; it can also help to remove air bubbles over the atomizer holes. Press and hold the button on the MUV battery to vape. The onset time is usually less than 15 minutes and the effects are felt from 1-4 hours, depending on tolerance and dose amount.

Charging can be accomplished by screwing the threaded end of the MUV battery into the USB charger, do not over tighten. Plug the USB charger into an outlet, the red light will indicate charging. The light on the USB charger will turn green to indicate a fully charged battery.

**CONTRAINDICATIONS:** Patients known to be allergic to cannabis should not use cannabis products.

Relative contraindications include coronary heart diseases, hypotension, drug abuse, alcohol abuse, mania, depression, bipolar, schizophrenia, or a prior negative reaction to cannabis.

**WARNINGS AND PRECAUTIONS:** Be sure to notify your physician if you have any of the following:

- Have or had history of heart disorders because of occasional low blood pressure, high blood pressure, rapid heart rate, palpitations, or fainting;

- Present or past issues with drug abuse;
- Present or past issues with alcohol abuse;
- Have or had mental health problems (depression, mania, bipolar, or schizophrenia);
- Present or past history of epilepsy, seizure disorders, and/or seizure-like activity;
- Have any allergies to drugs;
- Are pregnant or nursing, or intend to become pregnant.

If you become pregnant while taking any MUV cannabis-infused product, stop using immediately and consult with your physician.

MUV Plus Vape Pens should be used with caution, particularly with children and elderly patients, as there are few studies in these patient populations. A physician should monitor children under the age of 18 closely as THC can have adverse effects on brain development. When consulting with your physician, please include all current medications (both prescription and non-prescription) as MUV Plus Vape Pens can theoretically interact with other drug therapies. Avoid grapefruit or grapefruit juice and other CYP450 inhibitors as these can adversely affect THC treatments. Adverse reactions could also occur with alcohol and other drugs that affect the CNS (such as Valium, Librium, Xanax, Seconal, Nembutal, or Phenobarbital).

**ADVERSE REACTIONS:** Tell your physician if any symptoms persist or worsen with time:

- Cardiovascular: palpitations, tachycardia, vasodilation, hypotension (low blood pressure);
- Digestive: dry mouth, abdominal pain, nausea, vomiting, diarrhea, constipation, anorexia, excessive appetite, hepatic enzyme elevation;
- Nervous System: euphoria, drowsiness, memory loss, confusion, anxiety, paranoia, depersonalization, hallucinations, poor balance, dizziness, somnolence, nightmares, depression, difficulty speaking;
- Musculoskeletal: myalgias;
- Skin: flushing, sweating, irritation;
- Ocular: conjunctivitis, impaired vision, irritation;
- Body: chills, headache, fatigue;
- Respiratory: cough, rhinitis, sinusitis.

### **MUV PÜRE Vape Pens (500 mg) Maui Wowie, Tangie , OG Kush, Blueberry, Black Mamba**

**TOTAL PRODUCT DOSES:** 1 cartridge contains a total of 400 mg THC and <25 mg CBD, with ~167 total doses per cartridge

**Canna-Tsu (High CBD)**  
**TOTAL PRODUCT DOSES:** 1 cartridge contains a total of 200 mg CBD and 200 mg THC, with ~167 total doses per cartridge

**DOSE:** 3 mg per 3-second inhalation  
**INACTIVE INGREDIENTS:** Cannabis Derived and All Natural Terpenes

**INTRODUCTION:** This pamphlet provides a summary of information about MUV PÜRE Vape Pens. Please read this pamphlet thoroughly and keep it with your medicine. If you have any questions, please consult your physician.

MUV PÜRE Vape Pens contain Δ9-tetrahydrocannabinol (THC) and cannabidiol (CBD) extracted and distilled from *Cannabis* spp. plants meticulously grown without the use of harmful pesticides.

**IMPORTANT:** Your physician has recommended this medication for your use only. **DO NOT LET ANYONE ELSE USE IT. KEEP THIS MEDICINE OUT OF THE REACH OF CHILDREN AND PETS.**

If a child puts cartridge contents on skin or in mouth, remove immediately and contact a poison control center. Do not drive a car or operate heavy machinery until you know how this medication affects you. While taking this medication, do not drink alcohol or take other drugs

that have an effect on the central nervous system, such as antidepressants or sleep aids.

Unless advised by your physician, do not use this drug if you are pregnant or nursing.

**CLINICAL PHARMACOLOGY:** The endocannabinoid system is a series of receptors located throughout the body, which control important biological functions. Your body produces its own endocannabinoids, and cannabinoids like Δ9-tetrahydrocannabinol (THC) and cannabidiol (CBD) engage these receptors to produce various effects that can promote symptom relief. THC is an agonist of the CB<sub>1</sub> receptor located throughout the central nervous system (CNS) and brain. For this reason, THC is known as the psychoactive cannabinoid, which can produce euphoria or the “high” commonly associated with cannabis use. CBD works indirectly, as an antagonist, on the CB<sub>1</sub> and CB<sub>2</sub> receptors by interacting with other receptors to disrupt endocannabinoid function and binding. Because of its unique mode of action, CBD is non-psychoactive and can even reduce the side effects of THC.

Inhalation provides one of the quickest onset times of all dosing methods by delivering cannabinoids directly to the lungs, and subsequently the bloodstream. Little degradation takes place in the body, like metabolism in the liver to 11-hydroxy THC, which makes inhalation (and vaping) an excellent way to titrate dosing. MÜV PÜRE Vape Pens contain no ingredients other than cannabis derived and all natural terpenes. Vaporization limits toxic byproducts accompanied by combustion and smoking. Common effects of THC include euphoria, relaxation, sedation, increased appetite, and nausea reduction while side effects can include decreased blood pressure, anxiety, or paranoia. Lethal overdose has never been reported with THC or cannabis use.

Due to CB<sub>1</sub> activity in the cerebral cortex, hypothalamus, and other regions of the brain and spinal cord, THC can regulate neurological pain reception. THC has been shown to be effective as conventional opiate treatments for pain reduction and analgesia (Noyes et al. 1975; Maurer et al. 1990; Hosking and Zajicek, 2008). Clinical evidence has also shown THC to be effective in pain management and muscle spasticity/spasms especially in multiple sclerosis (MS) and other chronic pain conditions (Darmani, 2001; De Petrocellis et al. 2000). Clinical data has also proven THC to be effective for appetite stimulation in patients with human immunodeficiency virus (HIV) and acquired immune deficiency syndrome (AIDS). Additionally, THC acts as an anti-emetic and stimulates appetite for cancer patients undergoing chemotherapy treatments. CBD has anti-anxiety and anti-depressant effects (de Mello Schier et al. 2014); these indications have also been corroborated with social anxiety disorders (Bergamaschi et al. 2011) and THC-induced psychosis (Zuardi et al. 1982; Bhattacharyya et al. 2010).

Sleep is an important aspect of palliative care and quality of life; and anandamide, a naturally occurring human endocannabinoid, has been shown to illicit sleep responses and improve REM sleep (Murillo-Rodriguez et al. 1998). Anandamide activates CB<sub>1</sub> receptors, and similarly, THC significantly decreases the time it takes to fall asleep, and once asleep THC led to fewer awakenings during the first half of the night (Cousens and DiMascio, 1973; Nicholson et al. 2004).

**INDICATIONS AND USE:** MÜV PÜRE Vape Pens are ideally used for a fast acting, potent treatment option. Conditions for use include: cancer, glaucoma, HIV and AIDS, MS, hepatitis C, amyotrophic lateral sclerosis (ALS), Crohn’s disease, Parkinson’s disease, or any other debilitating medical condition that a physician believes would outweigh the potential risks for a patient. It can also be used as a palliative care treatment due to its improvements on general outlook including pain, spasticity, weight loss, anxiety, and sleep promotion.

**DOSAGE AND ADMINISTRATION:** When starting a new dosing regimen, it is crucially important that medication is administered in small doses (known as titrating) to determine an effective dose and to minimize side effects. Patients with little or no prior cannabis experience should be particularly careful. It is best to start with one 3-second inhalation at first to know how this product will affect you before increasing the dose.

To use your MÜV PÜRE Vape Pen, screw the threaded end of the cartridge into the battery. The connection should be snug but not over tightened; unscrewing the cartridge a ¼ turn from snugness can create a better functioning connection. Press the button on the MÜV battery 5 times to

turn battery on/off. Press the button 2 times to activate the ‘preheat function,’ this provides 10 seconds of low heat to warm the oil prior to vaping; it can also help to remove air bubbles over the atomizer holes. Press and hold the button on the MÜV battery to vape. The onset time is usually less than 15 minutes and the effects are felt from 1-4 hours, depending on tolerance and dose amount.

Charging can be accomplished by screwing the threaded end of the MÜV battery into the USB charger, do not over tighten. Plug the USB charger into an outlet, the red light will indicate charging. The light on the USB charger will turn green to indicate a fully charged battery.

**CONTRAINDICATIONS:** Patients known to be allergic to cannabis should not use cannabis products.

Relative contraindications include: coronary heart diseases, hypotension, drug abuse, alcohol abuse, mania, depression, bipolar, schizophrenia, or a prior negative reaction to cannabis.

**WARNINGS AND PRECAUTIONS:** Be sure to notify your physician if you have any of the following:

- Have or had history of heart disorders because of occasional low blood pressure, high blood pressure, rapid heart rate, palpitations, or fainting;
- Present or past issues with drug abuse;
- Present or past issues with alcohol abuse;
- Have or had mental health problems (depression, mania, bipolar, or schizophrenia);
- Present or past history of epilepsy, seizure disorders, and/or seizure-like activity;
- Have any allergies to drugs;
- Are pregnant or nursing, or intend to become pregnant.

If you become pregnant while taking any MÜV cannabis-infused product, stop using immediately and consult with your physician.

MÜV PÜRE Vape Pens should be used with caution, particularly with children and elderly patients, as there are few studies in these patient populations. A physician should monitor children under the age of 18 closely as THC can have adverse effects on brain development. When consulting with your physician, please include all current medications (both prescription and non-prescription) as MÜV Prime Vape Pens can theoretically interact with other drug therapies. Avoid grapefruit or grapefruit juice and other CYP450 inhibitors as these can adversely affect THC treatments. Adverse reactions could also occur with alcohol and other drugs that affect the CNS (such as Valium, Librium, Xanax, Seconal, Nembutal, or Phenobarbital).

**ADVERSE REACTIONS:** Tell your physician if any symptoms persist or worsen with time:

- Cardiovascular: palpitations, tachycardia, vasodilation, hypotension (low blood pressure);
- Digestive: dry mouth, abdominal pain, nausea, vomiting, diarrhea, constipation, anorexia, excessive appetite, hepatic enzyme elevation;
- Nervous System: euphoria, drowsiness, memory loss, confusion, anxiety, paranoia, depersonalization, hallucinations, poor balance, dizziness, somnolence, nightmares, depression, difficulty speaking;
- Musculoskeletal: myalgias;
- Skin: flushing, sweating, irritation;
- Ocular: conjunctivitis, impaired vision, irritation;
- Body: chills, headache, fatigue;
- Respiratory: cough, rhinitis, sinusitis.

**MÜV-G Pen Gio Vapes (500 mg)  
Jack Herer, Pineapple Express, Papaya OG, Clementine,  
Northern Lights, and Grape Ape**

**DOSE:** 5 mg per 5-second inhalation  
**TOTAL PRODUCT DOSES:** 1 cartridge (excluding Sour Tsunami) contains a total of 350 mg THC and <25 mg CBD, with ~100 total doses per cartridge. Sour Tsunami contains 280 mg CBD and 90 mg THC.  
**INACTIVE INGREDIENTS:** All Natural, Reintroduced Cannabis Terpenes

**INTRODUCTION:** This pamphlet provides a summary of information about MÜV-G Pen Gio Vapes. Please read this pamphlet thoroughly and keep it with your medicine. If you have any questions, please consult your physician.

MÜV-G Pen Gio Vapes contain at least 350 mg total cannabinoids extracted and distilled from *Cannabis* spp. plants meticulously grown without the use of harmful pesticides.

**IMPORTANT:** Your physician has recommended this medication for your use only. **DO NOT LET ANYONE ELSE USE IT. KEEP THIS MEDICINE OUT OF THE REACH OF CHILDREN AND PETS.**

If a child puts cartridge contents on skin or in mouth, remove immediately and contact a poison control center. Do not drive a car or operate heavy machinery until you know how this medication affects you. While taking this medication, do not drink alcohol or take other drugs that have an effect on the central nervous system, such as antidepressants or sleep aids.

Unless advised by your physician, do not use this drug if you are pregnant or nursing.

**CLINICAL PHARMACOLOGY:** The endocannabinoid system is a series of receptors located throughout the body, which control important biological functions. Your body produces its own endocannabinoids, and cannabinoids like Δ9-tetrahydrocannabinol (THC) and cannabidiol (CBD) engage these receptors to produce various effects that can promote symptom relief. THC is an agonist of the CB<sub>1</sub> receptor located throughout the central nervous system (CNS) and brain. For this reason, THC is known as the psychoactive cannabinoid, which can produce euphoria or the “high” commonly associated with cannabis use. CBD works indirectly, as an antagonist, on the CB<sub>1</sub> and CB<sub>2</sub> receptors by interacting with other receptors to disrupt endocannabinoid function and binding. Because of its unique mode of action, CBD is non-psychoactive and can even reduce the side effects of THC.

Inhalation provides one of the quickest onset times of all dosing methods by delivering cannabinoids directly to the lungs, and subsequently the bloodstream. Little degradation takes place in the body, like metabolism in the liver to 11-hydroxy THC, which makes inhalation (and vaping) an excellent way to titrate dosing. MÜV-G Pen Gio Vapes contain no ingredients other than reintroduced cannabis terpenes purified by distillation and vaporization limits toxic byproducts accompanied by combustion and smoking. Common effects of THC include euphoria, relaxation, sedation, increased appetite, and nausea reduction while side effects can include decreased blood pressure, anxiety, or paranoia. Lethal overdose has never been reported with THC or cannabis use.

Due to CB<sub>1</sub> activity in the cerebral cortex, hypothalamus, and other regions of the brain and spinal cord, THC can regulate neurological pain reception. THC has been shown to be effective as conventional opiate treatments for pain reduction and analgesia (Noyes et al. 1975; Maurer et al. 1990; Hosking and Zajicek, 2008). Clinical evidence has also shown THC to be effective in pain management and muscle spasticity/spasms especially in multiple sclerosis (MS) and other chronic pain conditions (Darmani, 2001; De Petrocellis et al. 2000). Clinical data has also proven THC to be effective for appetite stimulation in patients with human immunodeficiency virus (HIV) and acquired immune deficiency syndrome (AIDS). Additionally, THC acts as an anti-emetic and stimulates appetite for cancer patients undergoing chemotherapy treatments. CBD has anti-anxiety and anti-depressant effects (de Mello Schier et al. 2014); these indications have also been corroborated with social anxiety disorders (Bergamaschi et al. 2011) and THC-induced psychosis (Zuardi et al. 1982; Bhattacharyya et al. 2010).

Sleep is an important aspect of palliative care and quality of life; and anandamide, a naturally occurring human endocannabinoid, has been shown to illicit sleep responses and improve REM sleep (Murillo-Rodriguez et al. 1998). Anandamide activates CB<sub>1</sub> receptors, and similarly, THC significantly decreases the time it takes to fall asleep, and once asleep THC led to fewer awakenings during the first half of the night (Cousens and DiMascio, 1973; Nicholson et al. 2004).

**INDICATIONS AND USE:** MÜV-G Pen Gio Vapes are ideally used for a fast acting, potent treatment option. Conditions for use include: cancer, glaucoma, HIV and AIDS, MS, hepatitis C, amyotrophic lateral sclerosis (ALS), Crohn’s

disease, Parkinson's disease, or any other debilitating medical condition that a physician believes would outweigh the potential risks for a patient. It can also be used as a palliative care treatment due to its improvements on general outlook including pain, spasticity, weight loss, anxiety, and sleep promotion.

**DOSAGE AND ADMINISTRATION:** When starting a new dosing regimen, it is crucially important that medication is administered in small doses (known as titrating) to determine an effective dose and to minimize side effects. Patients with little or no prior cannabis experience should be particularly careful. It is best to start with one 3-second inhalation at first to know how this product will affect you before increasing the dose.

To use your MÜV-G Pen Gio Vapes, line up the light up 'G' on the battery with the 'G' on the cartridge and slide the cartridge into the battery. A magnetic connection ensures that the cartridge will connect with the battery. Just place your mouth on the cartridge and inhale for 5 seconds to have one dose. The onset time is usually less than 15 minutes and the effects are felt from 1-4 hours, depending on tolerance and dose amount.

Charging can be accomplished by plugging the micro-USB into the bottom of the battery. Plug the USB charger into an outlet, the blue light will indicate charging. The light on the USB charger will turn off to indicate a fully charged battery.

**CONTRAINDICATIONS:** Patients known to be allergic to cannabis should not use cannabis products.

Relative contraindications include: coronary heart diseases, hypotension, drug abuse, alcohol abuse, mania, depression, bipolar, schizophrenia, or a prior negative reaction to cannabis.

**WARNINGS AND PRECAUTIONS:** Be sure to notify your physician if you have any of the following:

- Have or had history of heart disorders because of occasional low blood pressure, high blood pressure, rapid heart rate, palpitations, or fainting;
- Present or past issues with drug abuse;
- Present or past issues with alcohol abuse;
- Have or had mental health problems (depression, mania, bipolar, or schizophrenia);
- Present or past history of epilepsy, seizure disorders, and/or seizure-like activity;
- Have any allergies to drugs;
- Are pregnant or nursing, or intend to become pregnant.

If you become pregnant while taking any MÜV cannabis-infused product, stop using immediately and consult with your physician.

MÜV-G Pen Gio Vapes should be used with caution, particularly with children and elderly patients, as there are few studies in these patient populations. A physician should monitor children under the age of 18 closely as THC can have adverse effects on brain development.

When consulting with your physician, please include all current medications (both prescription and non-prescription) as MÜV-G Pen Gio Vapes can theoretically interact with other drug therapies. Avoid grapefruit or grapefruit juice and other CYP450 inhibitors as these can adversely affect THC treatments. Adverse reactions could also occur with alcohol and other drugs that affect the CNS (such as Valium, Librium, Xanax, Seconal, Nembutal, or Phenobarbital).

**ADVERSE REACTIONS:** Tell your physician if any symptoms persist or worsen with time:

- Cardiovascular: palpitations, tachycardia, vasodilation, hypotension (low blood pressure);
- Digestive: dry mouth, abdominal pain, nausea, vomiting, diarrhea, constipation, anorexia, excessive appetite, hepatic enzyme elevation;
- Nervous System: euphoria, drowsiness, memory loss, confusion, anxiety, paranoia, depersonalization, hallucinations, poor balance, dizziness, somnolence, nightmares, depression, difficulty speaking;
- Musculoskeletal: myalgias;
- Skin: flushing, sweating, irritation;

- Ocular: conjunctivitis, impaired vision, irritation;
- Body: chills, headache, fatigue;
- Respiratory: cough, rhinitis, sinusitis.

### **MÜV Metered-Dose Inhaler 400 mg THC and 200 mg THC/200mg CBD (1:1)**

DOSE: 2.0 mg per actuation  
THC TOTAL PRODUCT DOSES: 1 canister contains a total of 400 mg THC and <25 mg CBD, with ~150 total doses per device  
CBD TOTAL PRODUCT DOSES: 1 canister contains a total of 200 mg CBD and 200 mg THC, with ~150 total doses per device  
INACTIVE INGREDIENTS (All USP or Pharma-grade):  
HFA134a, Ethanol, All Natural Terpenes, and Sorbitan Trioleate

**INTRODUCTION:** This pamphlet provides a summary of information about MÜV Metered-Dose Inhalers. Please read this pamphlet thoroughly and keep it with your medicine. If you have any questions, please consult your physician.

MÜV Metered-Dose Inhalers contain 400 mg active ingredient extracted and distilled from *Cannabis* spp. plants meticulously grown without the use of harmful pesticides.

**IMPORTANT:** Your physician has recommended this medication for your use only. **DO NOT LET ANYONE ELSE USE IT. KEEP THIS MEDICINE OUT OF THE REACH OF CHILDREN AND PETS.**

If a child contacts canister contents on skin or in mouth, remove immediately and contact a poison control center. Do not drive a car or operate heavy machinery until you know how this medication affects you. While taking this medication, do not drink alcohol or take other drugs that have an effect on the central nervous system, such as antidepressants or sleep aids.

Unless advised by your physician, do not use this drug if you are pregnant or nursing.

**CLINICAL PHARMACOLOGY:** The endocannabinoid system is a series of receptors located throughout the body, which control important biological functions. Your body produces its own endocannabinoids, and cannabinoids like Δ9-tetrahydrocannabinol (THC) and cannabidiol (CBD) engage these receptors to produce various effects that can promote symptom relief. THC is an agonist of the CB<sub>1</sub> receptor located throughout the central nervous system (CNS) and brain. For this reason, THC is known as the psychoactive cannabinoid, which can produce euphoria or the "high" commonly associated with cannabis use. CBD works indirectly, as an antagonist, on the CB<sub>1</sub> and CB<sub>2</sub> receptors by interacting with other receptors to disrupt endocannabinoid function and binding.

Inhalation provides one of the quickest onset times of all dosing methods by delivering cannabinoids directly to the lungs, and subsequently the bloodstream. Little degradation takes place in the body, like metabolism in the liver to 11-hydroxy THC, which makes inhalation an excellent way to titrate dosing. MÜV Metered-Dose Inhalers create no heat which limits dosing irritation and toxic byproducts accompanied by combustion and smoking. Common effects of THC include euphoria, relaxation, sedation, increased appetite, and nausea reduction while side effects can include decreased blood pressure, anxiety, or paranoia. Common effects of CBD include relaxation, sedation, and alertness, depending on dose amount and individual. Side effects of CBD are rare and mild but could include anxiety, depression, dizziness, or feeling faint. Lethal overdose has never been reported with THC, CBD, or cannabis use.

Due to CB<sub>1</sub> activity in the cerebral cortex, hypothalamus, and other regions of the brain and spinal cord, THC can regulate neurological pain reception. THC has been shown to be effective as conventional opiate treatments for pain reduction and analgesia (Noyes et al. 1975; Maurer et al. 1990; Hosking and Zajicek, 2008). Clinical evidence has also shown THC to be effective in pain management and muscle spasticity/spasms especially in multiple sclerosis (MS) and other chronic pain conditions (Darmani, 2001; De Petrocellis et al. 2000). Clinical data has also proven THC to be effective for appetite stimulation in patients with human immunodeficiency virus (HIV) and acquired immune deficiency syndrome (AIDS). Additionally, THC acts as an anti-emetic and stimulates appetite for cancer patients

undergoing chemotherapy treatments. CBD has anti-anxiety and anti-depressant effects (de Mello Schier et al. 2014); these indications have also been corroborated with social anxiety disorders (Bergamaschi et al. 2011) and THC-induced psychosis (Zuardi et al. 1982; Bhattacharyya et al. 2010).

There are numerous targets for CBD, but the earliest studies have shown potent neuroprotective properties through antioxidant properties and improvement of certain neurodegenerative disorders (US Patent; Liput et al. 2013). Potent anti-epileptic effects have been demonstrated clinically for particular forms of epilepsy with neuronal protection in the hippocampus (GWPH Trials). CBD has anti-anxiety and anti-depressant effects (de Mello Schier et al. 2014); these indications have also been corroborated with social anxiety disorders (Bergamaschi et al. 2011) and THC-induced psychosis (Zuardi et al. 1982; Bhattacharyya et al. 2010).

Using defined ratios of THC and CBD leads to what is known as the cannabis "entourage effect" which leads to synergistic effects between compounds that would otherwise not be present with single compound treatment. A 1:1 ratio of THC and CBD therefore has both the effects of THC (euphoria, appetite stimulation, pain reduction) as well as CBD (for anxiety, inflammation, and spasticity improvement). Studies have shown that this ratio does not significantly attenuate the effects of THC, suggesting no significant decline in cognitive function (Jacobs et al. 2016). Clinical trials have shown that THC and CBD, co-administered in a 1:1 ratio, demonstrated a marked improvement in sleep quality for conditions ranging from multiple sclerosis, neuropathic pain, intractable cancer pain, and rheumatoid arthritis (Russo et al. 2007).

Sleep is an important aspect of palliative care and quality of life; and anandamide, a naturally occurring human endocannabinoid, has been shown to illicit sleep responses and improve REM sleep (Murillo-Rodriguez et al. 1998). Anandamide activates CB<sub>1</sub> receptors, and similarly, THC significantly decreases the time it takes to fall asleep, and once asleep THC led to fewer awakenings during the first half of the night (Cousens and DiMascio, 1973; Nicholson et al. 2004).

**INDICATIONS AND USE:** MÜV Metered-Dose Inhalers are ideally used for a fast acting, effective treatment option. Conditions for use include: cancer, glaucoma, HIV and AIDS, MS, hepatitis C, amyotrophic lateral sclerosis (ALS), Crohn's disease, Parkinson's disease, or any other debilitating medical condition that a physician believes would outweigh the potential risks for a patient. It can also be used as a palliative care treatment due to its improvements on general outlook including pain, spasticity, weight loss, anxiety, and sleep promotion.

**DOSAGE AND ADMINISTRATION:** When starting a new dosing regimen, it is crucially important that medication is administered in small doses (known as titrating) to determine an effective dose and to minimize side effects. Patients with little or no prior cannabis experience should be particularly careful; one actuation provides 2 mg of an active dose.

Shake your MÜV Metered-Dose Inhaler before each use, and remove the mouthpiece cap if necessary. Breathe out and bring the inhaler to your mouth, tilt your head upwards slightly and press the top of the inhaler once and keep breathing in slowly until a full breath is taken. Remove the inhaler from your mouth and hold your breath for about 10 seconds and breathe out; no vapors will be present during exhalation. If spray droplets become large or sporadic, a cotton swab can be used to clean the actuator through the mouthpiece.

**CONTRAINDICATIONS:** Patients known to be allergic to cannabis should not use cannabis products.

Relative contraindications include: coronary heart diseases, hypotension, drug abuse, alcohol abuse, mania, depression, bipolar, schizophrenia, or a prior negative reaction to cannabis.

**WARNINGS AND PRECAUTIONS:** Be sure to notify your physician if you have any of the following:

- Have or had history of heart disorders because of occasional low blood pressure, high blood pressure, rapid heart rate, palpitations, or fainting;
- Present or past issues with drug abuse;
- Present or past issues with alcohol abuse;

- Have or had mental health problems (depression, mania, bipolar, or schizophrenia);
- Present or past history of epilepsy, seizure disorders, and/or seizure-like activity;
- Have any allergies to drugs;
- Are pregnant or nursing, or intend to become pregnant.

If you become pregnant while taking any MUV cannabis-infused product, stop using immediately and consult with your physician.

MUV Metered-Dose Inhalers should be used with caution, particularly with children and elderly patients, as there are few studies in these patient populations. A physician should monitor children under the age of 18 closely as THC can have adverse effects on brain development.

When consulting with your physician, please include all current medications (both prescription and non-prescription) as MUV Metered-Dose Inhalers can theoretically interact with other drug therapies. Avoid grapefruit or grapefruit juice and other CYP450 inhibitors as these can adversely affect THC treatments. Adverse reactions could also occur with alcohol and other drugs that affect the CNS (such as Valium, Librium, Xanax, Seconal, Nembutal, or Phenobarbital).

**ADVERSE REACTIONS:** Tell your physician if any symptoms persist or worsen with time:

- Cardiovascular: palpitations, tachycardia, vasodilation, hypotension (low blood pressure);
- Digestive: dry mouth, abdominal pain, nausea, vomiting, diarrhea, constipation, anorexia, excessive appetite, hepatic enzyme elevation;
- Nervous System: euphoria, drowsiness, memory loss, confusion, anxiety, paranoia, depersonalization, hallucinations, poor balance, dizziness, somnolence, nightmares, depression, difficulty speaking;
- Musculoskeletal: myalgias;
- Skin: flushing, sweating, irritation;
- Ocular: conjunctivitis, impaired vision, irritation;
- Body: chills, headache, fatigue;
- Respiratory: cough, rhinitis, sinusitis.

### **MUV Concentrates (1 gram) Shatter, Crumble, Live Ice Water Extracted Rosin**

DOSE: 25 mg per rice-sized grain piece of concentrate  
TOTAL PRODUCT DOSES: 1 gram contains a total of approximately 750 mg THC and <25 mg CBD, with 40 total doses per 1 gram  
INACTIVE INGREDIENTS: None

**INTRODUCTION:** This pamphlet provides a summary of information about MUV Concentrates. Please read this pamphlet thoroughly and keep it with your medicine. If you have any questions, please consult your physician.

MUV Concentrates contain approximately 750 mg Δ9-tetrahydrocannabinol (THC) and <25 mg cannabidiol (CBD) extracted from *Cannabis* spp. plants meticulously grown without the use of harmful pesticides. However, strains can differ in their cannabinoid profiles and certain Concentrates can have higher THC and/or CBD concentrations.

**IMPORTANT:** Your physician has recommended this medication for your use only. DO NOT LET ANYONE ELSE USE IT. KEEP THIS MEDICINE OUT OF THE REACH OF CHILDREN AND PETS.

If a child puts contents on skin or in mouth, remove immediately and contact a poison control center. Do not drive a car or operate heavy machinery until you know how this medication affects you. While taking this medication, do not drink alcohol or take other drugs that have an effect on the central nervous system, such as antidepressants or sleep aids.

Unless advised by your physician, do not use this drug if you are pregnant or nursing.

**CLINICAL PHARMACOLOGY:** The endocannabinoid system is a series of receptors located throughout the body, which control important biological functions. Your body produces its own endocannabinoids, and cannabinoids like Δ9-

tetrahydrocannabinol (THC) and cannabidiol (CBD) engage these receptors to produce various effects that can promote symptom relief. THC is an agonist of the CB<sub>1</sub> receptor located throughout the central nervous system (CNS) and brain. For this reason, THC is known as the psychoactive cannabinoid, which can produce euphoria or the “high” commonly associated with cannabis use. CBD works indirectly, as an antagonist, on the CB<sub>1</sub> and CB<sub>2</sub> receptors by interacting with other receptors to disrupt endocannabinoid function and binding. Because of its unique mode of action, CBD is non-psychoactive and can even reduce the side effects of THC.

Inhalation provides one of the quickest onset times of all dosing methods by delivering cannabinoids directly to the lungs, and subsequently the bloodstream. Little degradation takes place in the body, like metabolism in the liver to 11-hydroxy THC, which makes inhalation (and vaping) an excellent way to titrate dosing. MUV Concentrates contain no ingredients other than natural, plant-derived compounds and vaporization limits toxic byproducts accompanied by combustion and smoking. Common effects of THC include euphoria, relaxation, sedation, increased appetite, and nausea reduction while side effects can include decreased blood pressure, anxiety, or paranoia. Lethal overdose has never been reported with THC or cannabis use.

Due to CB<sub>1</sub> activity in the cerebral cortex, hypothalamus, and other regions of the brain and spinal cord, THC can regulate neurological pain reception. THC has been shown to be effective as conventional opiate treatments for pain reduction and analgesia (Noyes et al. 1975; Maurer et al. 1990; Hosking and Zajicek, 2008). Clinical evidence has also shown THC to be effective in pain management and muscle spasticity/spasms especially in multiple sclerosis (MS) and other chronic pain conditions (Darmani, 2001; De Petrocellis et al. 2000). Clinical data has also proven THC to be effective for appetite stimulation in patients with human immunodeficiency virus (HIV) and acquired immune deficiency syndrome (AIDS). Additionally, THC acts as an anti-emetic and stimulates appetite for cancer patients undergoing chemotherapy treatments. CBD has anti-anxiety and anti-depressant effects (de Mello Schier et al. 2014); these indications have also been corroborated with social anxiety disorders (Bergamaschi et al. 2011) and THC-induced psychosis (Zuardi et al. 1982; Bhattacharyya et al. 2010).

Sleep is an important aspect of palliative care and quality of life; and anandamide, a naturally occurring human endocannabinoid, has been shown to illicit sleep responses and improve REM sleep (Murillo-Rodriguez et al. 1998). Anandamide activates CB<sub>1</sub> receptors, and similarly, THC significantly decreases the time it takes to fall asleep, and once asleep THC led to fewer awakenings during the first half of the night (Cousens and DiMascio, 1973; Nicholson et al. 2004).

**INDICATIONS AND USE:** MUV Concentrates are ideally used for a fast acting, potent treatment option. Conditions for use include: cancer, glaucoma, HIV and AIDS, MS, hepatitis C, amyotrophic lateral sclerosis (ALS), Crohn’s disease, Parkinson’s disease, or any other debilitating medical condition that a physician believes would outweigh the potential risks for a patient. It can also be used as a palliative care treatment due to its improvements on general outlook including pain, spasticity, weight loss, anxiety, and sleep promotion.

**DOSAGE AND ADMINISTRATION:** When starting a new dosing regimen, it is crucially important that medication is administered in small doses (known as titrating) to determine an effective dose and to minimize side effects. Patients with little or no prior cannabis experience should be particularly careful. It is best to start with rice-sized grain (25 mg) at first to know how this product will affect you before increasing the dose.

To dose out the Concentrate, use a metal spatula to scoop out a rice grain sized piece of concentrate. The Dipper is an all-in-one vaporizer unit that will be used to vaporize the Concentrate, please refer to the Dipper User Manual for proper usage. The Dipper can be used in one of two different inhalation configurations: 1) a flower through device in which the external heated coil is used to vaporize the extract directly from the spatula, or 2) the administered dose can be placed into the quartz crystal atomizer (internal coil) of the Dipper Vaporizer for vaporization. The onset time is usually less than 15 minutes and the effects are felt from 1-4 hours, depending on tolerance and dose amount.

**CONTRAINDICATIONS:** Patients known to be allergic to cannabis should not use cannabis products.

Relative contraindications include: coronary heart diseases, hypotension, drug abuse, alcohol abuse, mania, depression, bipolar, schizophrenia, or a prior negative reaction to cannabis.

**WARNINGS AND PRECAUTIONS:** Be sure to notify your physician if you have any of the following:

- Have or had history of heart disorders because of occasional low blood pressure, high blood pressure, rapid heart rate, palpitations, or fainting;
- Present or past issues with drug abuse;
- Present or past issues with alcohol abuse;
- Have or had mental health problems (depression, mania, bipolar, or schizophrenia);
- Present or past history of epilepsy, seizure disorders, and/or seizure-like activity;
- Have any allergies to drugs;
- Are pregnant or nursing, or intend to become pregnant.

If you become pregnant while taking any MUV cannabis-infused product, stop using immediately and consult with your physician.

MUV Concentrates should be used with caution, particularly with children and elderly patients, as there are few studies in these patient populations. A physician should monitor children under the age of 18 closely as THC can have adverse effects on brain development.

When consulting with your physician, please include all current medications (both prescription and non-prescription) as MUV Concentrates can theoretically interact with other drug therapies. Avoid grapefruit or grapefruit juice and other CYP450 inhibitors as these can adversely affect THC treatments. Adverse reactions could also occur with alcohol and other drugs that affect the CNS (such as Valium, Librium, Xanax, Seconal, Nembutal, or Phenobarbital).

**ADVERSE REACTIONS:** Tell your physician if any symptoms persist or worsen with time:

- Cardiovascular: palpitations, tachycardia, vasodilation, hypotension (low blood pressure);
- Digestive: dry mouth, abdominal pain, nausea, vomiting, diarrhea, constipation, anorexia, excessive appetite, hepatic enzyme elevation;
- Nervous System: euphoria, drowsiness, memory loss, confusion, anxiety, paranoia, depersonalization, hallucinations, poor balance, dizziness, somnolence, nightmares, depression, difficulty speaking;
- Musculoskeletal: myalgias;
- Skin: flushing, sweating, irritation;
- Ocular: conjunctivitis, impaired vision, irritation;
- Body: chills, headache, fatigue;
- Respiratory: cough, rhinitis, sinusitis.

## **TOPICAL DELIVERY METHODS**

### **MUV Pain Relief Cream**

DOSE: 2 mg THC and 2 mg CBD per 500 mg cream (about the size of a quarter)  
TOTAL PRODUCT DOSES: 1 bottle contains a total of 200 mg THC and 200 mg CBD, with 100 total doses per bottle  
INACTIVE INGREDIENTS (All Natural): Aloe Barbadensis Leaf Juice, Shea Butter, Vegetable Wax, Glycerin, Jojoba, Cannabis Extract, Bromelain, Ginger, Capsicum and Potassium Sorbate

**INTRODUCTION:** This pamphlet provides a summary of information about MUV Pain Relief Cream. Please read this pamphlet thoroughly and keep it with your medicine. If you have any questions, please consult your physician.

MUV Pain Relief Cream contains 200 mg Δ9-tetrahydrocannabinol (THC) and 200 mg cannabidiol (CBD) extracted and distilled from *Cannabis* spp. plants meticulously grown without the use of harmful pesticides.

**IMPORTANT:** Your physician has recommended this medication for your use only. DO NOT LET ANYONE ELSE USE IT. KEEP THIS MEDICINE OUT OF THE REACH OF CHILDREN AND PETS.

If a child puts cream on skin or in mouth, remove immediately with towel and soap and water and contact a poison control center. Do not drive a car or operate heavy machinery until you know how this medication affects you. While taking this medication, do not drink alcohol or take other drugs that have an effect on the central nervous system, such as antidepressants or sleep aids.

Unless advised by your physician, do not use this drug if you are pregnant or nursing.

**CLINICAL PHARMACOLOGY:** The endocannabinoid system is a series of receptors located throughout the body that control important biological functions. Your body produces its own endocannabinoids, and cannabinoids like Δ9-tetrahydrocannabinol (THC) and cannabidiol (CBD) engage these receptors to produce various effects that can promote symptom relief. CB<sub>1</sub> receptors are located throughout the central nervous system (CNS) and brain; while CB<sub>2</sub> receptors are associated with the immune and gastrointestinal systems and both receptors are found in human skin. Using defined ratios of THC and CBD leads to what is known as the cannabis “entourage effect” which leads to synergistic effects between compounds that would otherwise not be present with single compound treatment.

Topical use of cannabinoids is unlikely to produce a euphoric effect even when using THC. However, topical administration can induce localized effects including analgesia and inflammation or spasticity relief while this all-natural cream will leave skin feeling soft and silky. It should be noted that lethal overdose has never been reported with THC or cannabis use.

The skin (dermis) is the largest organ in the human body and endocannabinoid receptors are well distributed throughout the skin, providing potential therapeutic targets throughout the body (Kupczyk et al. 2009). CBD has been to reduce inflammation and immune responses with collagen-induced arthritis in animals (Malfait et al. 2000). Furthermore, modulation of CB<sub>1</sub> receptors by endocannabinoids have been shown to decrease pain sensitivity and could provide therapy for chronic pain (Cravatt et al. 2003; Lichtman et al. 2004, Costa et al. 2008).

The Pain Relief Cream contains Capsicum which is used in many over-the-counter topical treatments as it contains capsaicin, a natural component of peppers, that has FDA-proven therapeutic benefits for analgesic pain relief.

**INDICATIONS AND USE:** MÜV Pain Relief Cream can be used for localized effects including areas of skin dryness, swelling, bruising, or other discomfort. Additionally, the high lipid solubility of the cannabinoids can create a “reservoir effect” in the stratum corneum of the skin (Touitou and Fabin, 1988) and provide longer sustained delivery times of THC and CBD. Conditions for use include: cancer, glaucoma, HIV and AIDS, MS, hepatitis C, amyotrophic lateral sclerosis (ALS), Crohn’s disease, Parkinson’s disease, or any other debilitating medical condition that a physician believes would outweigh the potential risks for a patient. It can also be used as a palliative care treatment due to its improvements on general outlook including pain, spasticity, weight loss, anxiety, and sleep promotion.

**DOSAGE AND ADMINISTRATION:** When starting a new dosing regimen, it is crucially important that medication is administered in small doses (known as titrating) to determine an effective dose and to minimize side effects. It is best to start with one quarter-sized portion of cream at first to know how this product will affect you before increasing the dose.

Common application sites for MÜV Pain Relief Cream include areas of soreness in limbs, joints, and overtired feet. The cream can also be used for hydration of dry or cracked skin. Prior to use, make sure that application site is clean and dry intact skin. Apply the cream to hands or directly to the affected area, place a thin layer onto skin, then gently rub in; this will ensure that the cream is evenly distributed for maximum absorption. Typical onset time for MÜV Pain Relief Cream is about 15-30 minutes and effects last 3-5 hours. Apply cream to affected area every 3-5 hours as needed. Avoid contact with eyes, nose, and mouth after applying cream and wash hands thoroughly if hands or fingers are used for application.

**CONTRAINDICATIONS:** Patients known to be allergic to cannabis should not use cannabis products.

Relative contraindications include: coronary heart diseases, hypotension, drug abuse, alcohol abuse, mania, depression, bipolar, schizophrenia, or a prior negative reaction to cannabis.

**WARNINGS AND PRECAUTIONS:** Be sure to notify your physician if you have any of the following:

- Have or had history of heart disorders because of occasional low blood pressure, high blood pressure, rapid heart rate, palpitations, or fainting;
- Present or past issues with drug abuse;
- Present or past issues with alcohol abuse;
- Have or had mental health problems (depression, mania, bipolar, or schizophrenia);
- Present or past history of epilepsy, seizure disorders, and/or seizure-like activity;
- Have any allergies to drugs;
- Are pregnant or nursing, or intend to become pregnant.

If you become pregnant while taking any MÜV cannabis-infused product, stop using immediately and consult with your physician.

MÜV Pain Relief Cream should be used with caution, particularly with children and elderly patients, as there are few studies in these patient populations. A physician should monitor children under the age of 18 closely as THC can have adverse effects on brain development.

When consulting with your physician, please include all current medications (both prescription and non-prescription) as MÜV Pain Relief Cream can theoretically interact with other drug therapies. Avoid grapefruit or grapefruit juice and other CYP450 inhibitors as these can adversely affect THC treatments. Adverse reactions could also occur with alcohol and other drugs that affect the CNS (such as Valium, Librium, Xanax, Seconal, Nembutal, or Phenobarbital).

**ADVERSE REACTIONS:** Tell your physician if any symptoms persist or worsen with time:

- Cardiovascular: palpitations, tachycardia, vasodilation, hypotension (low blood pressure);
- Digestive: dry mouth, abdominal pain, nausea, vomiting, diarrhea, constipation, anorexia, excessive appetite, hepatic enzyme elevation;
- Nervous System: euphoria, drowsiness, memory loss, confusion, anxiety, paranoia, depersonalization, hallucinations, poor balance, dizziness, somnolence, nightmares, depression, difficulty speaking;
- Musculoskeletal: myalgias;
- Skin: flushing, sweating, irritation at application site;
- Ocular: conjunctivitis, impaired vision, irritation;
- Body: chills, headache, fatigue;
- Respiratory: cough, rhinitis, sinusitis.

### **MÜV Hydrating Lotion**

**DOSE:** 0.6 mg THC and 0.6 mg CBD per 500 mg lotion (about the size of a quarter)

**TOTAL PRODUCT DOSES:** 1 bottle contains a total of 60 mg THC and 60 mg CBD, with 100 total doses per bottle

**INACTIVE INGREDIENTS (All Natural):**

Aloe Bardadensis Leaf Juice, Hi-Oleic Safflower Oil, Vegetable Emulsifiers, Organic Rose Hips Oil, Squalene, Shea Butter, Green Tea, Vitamin E, Potassium Sorbate, and Natural Fragrance

**INTRODUCTION:** This pamphlet provides a summary of information about MÜV Hydrating Lotion. Please read this pamphlet thoroughly and keep it with your medicine. If you have any questions, please consult your physician.

MÜV Hydrating Lotion contains 60 mg Δ9-tetrahydrocannabinol (THC) and 60 mg cannabidiol (CBD) extracted and purified from *Cannabis* spp. plants meticulously grown without the use of harmful pesticides.

**IMPORTANT:** Your physician has recommended this medication for your use only. **DO NOT LET ANYONE ELSE USE IT. KEEP THIS MEDICINE OUT OF THE REACH OF CHILDREN AND PETS.**

If a child puts lotion on skin or in mouth, remove immediately with towel and soap and water and contact a poison control center. Do not drive a car or operate heavy machinery until you know how this medication affects you. While taking this medication, do not drink alcohol or take other drugs that have an effect on the central nervous system, such as antidepressants or sleep aids.

Unless advised by your physician, do not use this drug if you are pregnant or nursing.

**CLINICAL PHARMACOLOGY:** The endocannabinoid system is a series of receptors located throughout the body that control important biological functions. Your body produces its own endocannabinoids, and cannabinoids like Δ9-tetrahydrocannabinol (THC) and cannabidiol (CBD) engage these receptors to produce various effects that can promote symptom relief. CB<sub>1</sub> receptors are located throughout the central nervous system (CNS) and brain; while CB<sub>2</sub> receptors are associated with the immune and gastrointestinal systems and both receptors are found in human skin. Using defined ratios of THC and CBD leads to what is known as the cannabis “entourage effect” which leads to synergistic effects between compounds that would otherwise not be present with single compound treatment.

Topical use of cannabinoids is unlikely to produce a euphoric effect even when using THC. However, topical administration can induce localized effects including analgesia and inflammation or spasticity relief while this all-natural lotion will leave skin feeling hydrated and smooth. It should be noted that lethal overdose has never been reported with THC or cannabis use.

The skin (dermis) is the largest organ in the human body and endocannabinoid receptors are well distributed throughout the skin, providing potential therapeutic targets throughout the body (Kupczyk et al. 2009). CBD has been to reduce inflammation and immune responses with collagen-induced arthritis in animals (Malfait et al. 2000). Furthermore, modulation of CB<sub>1</sub> receptors by endocannabinoids have been shown to decrease pain sensitivity and could provide therapy for chronic pain (Cravatt et al. 2003; Lichtman et al. 2004, Costa et al. 2008). The hydrating properties of shea butter and safflower oil pair well with the healing properties of rose hips oil and the potent antioxidants of green tea and vitamin E in the Hydrating Lotion.

**INDICATIONS AND USE:** MÜV Hydrating Lotion can be used for localized effects including areas of skin dryness, swelling, bruising, or other discomfort. Additionally, the high lipid solubility of the cannabinoids can create a “reservoir effect” in the stratum corneum of the skin (Touitou and Fabin, 1988) and provide longer sustained delivery times of THC and CBD. Conditions for use include: cancer, glaucoma, HIV and AIDS, MS, hepatitis C, amyotrophic lateral sclerosis (ALS), Crohn’s disease, Parkinson’s disease, or any other debilitating medical condition that a physician believes would outweigh the potential risks for a patient. It can also be used as a palliative care treatment due to its improvements on general outlook including pain, spasticity, weight loss, anxiety, and sleep promotion.

**DOSAGE AND ADMINISTRATION:** When starting a new dosing regimen, it is crucially important that medication is administered in small doses (known as titrating) to determine an effective dose and to minimize side effects. It is best to start with one quarter-sized portion of lotion at first to know how this product will affect you before increasing the dose.

Common application sites for MÜV Hydrating Lotion include areas of soreness in limbs, joints, and overtired feet. The lotion can also be used for hydration of dry or cracked skin to leave skin feeling silky smooth. Prior to use, make sure that application site is clean and dry intact skin. Apply the lotion to hands or directly to the affected area, place a thin layer onto skin, then gently rub in; this will ensure that the lotion is evenly distributed for maximum absorption. Typical onset time for MÜV Hydrating Lotion is about 15-30 minutes and effects last 3-5 hours. Apply lotion to affected area every 3-5 hours as needed. Avoid contact with eyes, nose, and mouth after applying lotion and wash hands thoroughly if hands or fingers are used for application.

**CONTRAINDICATIONS:** Patients known to be allergic to cannabis should not use cannabis products.

Relative contraindications include: coronary heart diseases, hypotension, drug abuse, alcohol abuse, mania, depression,

bipolar, schizophrenia, or a prior negative reaction to cannabis.

**WARNINGS AND PRECAUTIONS:** Be sure to notify your physician if you have any of the following:

- Have or had history of heart disorders because of occasional low blood pressure, high blood pressure, rapid heart rate, palpitations, or fainting;
- Present or past issues with drug abuse;
- Present or past issues with alcohol abuse;
- Have or had mental health problems (depression, mania, bipolar, or schizophrenia);
- Present or past history of epilepsy, seizure disorders, and/or seizure-like activity;
- Have any allergies to drugs;
- Are pregnant or nursing, or intend to become pregnant.

If you become pregnant while taking any MÜV cannabis-infused product, stop using immediately and consult with your physician.

MÜV Hydrating Lotion should be used with caution, particularly with children and elderly patients, as there are few studies in these patient populations. A physician should monitor children under the age of 18 closely as THC can have adverse effects on brain development.

When consulting with your physician, please include all current medications (both prescription and non-prescription) as MÜV Hydrating Lotion can theoretically interact with other drug therapies. Avoid grapefruit or grapefruit juice and other CYP450 inhibitors as these can adversely affect CBD treatments. Adverse reactions could also occur with alcohol and other drugs that affect the CNS (such as Valium, Librium, Xanax, Seconal, Nembutal, or Phenobarbital).

**ADVERSE REACTIONS:** Tell your physician if any symptoms persist or worsen with time:

- Cardiovascular: palpitations, tachycardia, vasodilation, hypotension (low blood pressure);
- Digestive: dry mouth, abdominal pain, nausea, vomiting, diarrhea, constipation, anorexia, excessive appetite, hepatic enzyme elevation;
- Nervous System: euphoria, drowsiness, memory loss, confusion, anxiety, paranoia, depersonalization, hallucinations, poor balance, dizziness, somnolence, nightmares, depression, difficulty speaking;
- Musculoskeletal: myalgias;
- Skin: flushing, sweating, irritation at application site;
- Ocular: conjunctivitis, impaired vision, irritation;
- Body: chills, headache, fatigue;
- Respiratory: cough, rhinitis, sinusitis.

### MÜV Sports Gel

**DOSE:** 1 mg THC and 1 mg CBD per 500 mg gel (about the size of a quarter)

**TOTAL PRODUCT DOSES:** 1 bottle contains a total of 100 mg THC and 100 mg CBD, with 100 total doses per bottle

**INACTIVE INGREDIENTS (All Natural):**

Aloe Barbadensis Leaf Juice, Oils of Coconut and Jojoba, Peppermint, Menthol, Camphor, Arnica, and Eucalyptus

**INTRODUCTION:** This pamphlet provides a summary of information about MÜV Sports Gel. Please read this pamphlet thoroughly and keep it with your medicine. If you have any questions, please consult your physician.

MÜV Sports Gel contains 100 mg Δ9-tetrahydrocannabinol (THC) and 100 mg cannabidiol (CBD) extracted and distilled from *Cannabis* spp. plants meticulously grown without the use of harmful pesticides.

**IMPORTANT:** Your physician has recommended this medication for your use only. **DO NOT LET ANYONE ELSE USE IT. KEEP THIS MEDICINE OUT OF THE REACH OF CHILDREN AND PETS.**

If a child puts gel on skin or in mouth, remove immediately with towel and soap and water and contact a poison control center. Do not drive a car or operate heavy machinery until you know how this medication affects you. While taking this

medication, do not drink alcohol or take other drugs that have an effect on the central nervous system, such as antidepressants or sleep aids.

Unless advised by your physician, do not use this drug if you are pregnant or nursing.

**CLINICAL PHARMACOLOGY:** The endocannabinoid system is a series of receptors located throughout the body that control important biological functions. Your body produces its own endocannabinoids, and cannabinoids like Δ9-tetrahydrocannabinol (THC) and cannabidiol (CBD) engage these receptors to produce various effects that can promote symptom relief. CB<sub>1</sub> receptors are located throughout the central nervous system (CNS) and brain; while CB<sub>2</sub> receptors are associated with the immune and gastrointestinal systems and both receptors are found in human skin. Using defined ratios of THC and CBD leads to what is known as the cannabis “entourage effect” which leads to synergistic effects between compounds that would otherwise not be present with single compound treatment.

Topical use of cannabinoids is unlikely to produce a euphoric effect even when using THC. However, topical administration can induce localized effects including analgesia and inflammation or spasticity relief while this all-natural gel will leave skin feeling cool and soothed. It should be noted that lethal overdose has never been reported with THC or cannabis use.

The skin (dermis) is the largest organ in the human body and endocannabinoid receptors are well distributed throughout the skin, providing potential therapeutic targets throughout the body (Kupczyk et al. 2009). CBD has been used to reduce inflammation and immune responses with collagen-induced arthritis in animals (Malfait et al. 2000). Furthermore, modulation of CB<sub>1</sub> receptors by endocannabinoids have been shown to decrease pain sensitivity and could provide therapy for chronic pain (Cravatt et al. 2003; Lichtman et al. 2004, Costa et al. 2008). Menthol and camphor are used synergistically in the Sports Gel and are both FDA-approved topical analgesics. Arnica is a naturally occurring herb that has been shown to promote healing of bruises and swelling while also having localized pain relief properties.

**INDICATIONS AND USE:** MÜV Sports Gel can be used for localized effects including areas of swelling, bruising, or other discomfort. Additionally, the high lipid solubility of the cannabinoids can create a “reservoir effect” in the stratum corneum of the skin (Touitou and Fabin, 1988) and provide longer sustained delivery times of THC and CBD. Conditions for use include: cancer, glaucoma, HIV and AIDS, MS, hepatitis C, amyotrophic lateral sclerosis (ALS), Crohn’s disease, Parkinson’s disease, or any other debilitating medical condition that a physician believes would outweigh the potential risks for a patient. It can also be used as a palliative care treatment due to its improvements on general outlook including pain, spasticity, weight loss, anxiety, and sleep promotion.

**DOSAGE AND ADMINISTRATION:** When starting a new dosing regimen, it is crucially important that medication is administered in small doses (known as titrating) to determine an effective dose and to minimize side effects. It is best to start with one quarter-sized portion of gel at first to know how this product will affect you before increasing the dose.

Common application sites for MÜV Sports Gel include areas of soreness in limbs, joints, and overtired feet. The gel can also be used to help soothe tension and muscle aches. Prior to use, make sure that application site is clean and dry intact skin. Apply the gel to hands or directly to the affected area, place a thin layer onto skin, then gently rub in; this will ensure that the gel is evenly distributed for maximum absorption. Typical onset time for MÜV Sports Gel is about 15-30 minutes and effects last 3-5 hours. Apply gel to affected area every 3-5 hours as needed. Avoid contact with eyes, nose, and mouth after applying gel and wash hands thoroughly if hands or fingers are used for application.

**CONTRAINDICATIONS:** Patients known to be allergic to cannabis should not use cannabis products.

Relative contraindications include: coronary heart diseases, hypotension, drug abuse, alcohol abuse, mania, depression, bipolar, schizophrenia, or a prior negative reaction to cannabis.

**WARNINGS AND PRECAUTIONS:** Be sure to notify your physician if you have any of the following:

- Have or had history of heart disorders because of occasional low blood pressure, high blood pressure, rapid heart rate, palpitations, or fainting;
- Present or past issues with drug abuse;
- Present or past issues with alcohol abuse;
- Have or had mental health problems (depression, mania, bipolar, or schizophrenia);
- Present or past history of epilepsy, seizure disorders, and/or seizure-like activity;
- Have any allergies to drugs;
- Are pregnant or nursing, or intend to become pregnant.

If you become pregnant while taking any MÜV cannabis-infused product, stop using immediately and consult with your physician.

MÜV Sports Gel should be used with caution, particularly with children and elderly patients, as there are few studies in these patient populations. A physician should monitor children under the age of 18 closely as THC can have adverse effects on brain development.

When consulting with your physician, please include all current medications (both prescription and non-prescription) as MÜV Sports Gel can theoretically interact with other drug therapies. Avoid grapefruit or grapefruit juice and other CYP450 inhibitors as these can adversely affect THC and CBD treatments. Adverse reactions could also occur with alcohol and other drugs that affect the CNS (such as Valium, Librium, Xanax, Seconal, Nembutal, or Phenobarbital).

**ADVERSE REACTIONS:** Tell your physician if any symptoms persist or worsen with time:

- Cardiovascular: palpitations, tachycardia, vasodilation, hypotension (low blood pressure);
- Digestive: dry mouth, abdominal pain, nausea, vomiting, diarrhea, constipation, anorexia, excessive appetite, hepatic enzyme elevation;
- Nervous System: euphoria, drowsiness, memory loss, confusion, anxiety, paranoia, depersonalization, hallucinations, poor balance, dizziness, somnolence, nightmares, depression, difficulty speaking;
- Musculoskeletal: myalgias;
- Skin: flushing, sweating, irritation at application site;
- Ocular: conjunctivitis, impaired vision, irritation;
- Body: chills, headache, fatigue;
- Respiratory: cough, rhinitis, sinusitis.

### MÜV Evolve Transdermal Gels 500 mg THC, 500 mg CBD, and 500 mg THC/CBD (1:1)

**THC and 1:1 DOSE:** One pump delivers 8 mg active dose  
**CBD DOSE:** One pump delivers 15 mg active dose

**THC TOTAL PRODUCT DOSES:** 1 bottle contains a total of 500 mg THC and <25 mg CBD, with 33 total doses per bottle

**CBD TOTAL PRODUCT DOSES:** 1 bottle contains a total of 500 mg CBD and <25 mg THC, with 33 total doses per bottle

**THC/CBD TOTAL PRODUCT DOSES:** 1 bottle contains a total of 250 mg THC and 250 mg CBD, with 33 total doses per bottle

**INACTIVE INGREDIENTS (All USP or Pharma-grade):**

Purified Water, Ethanol, Oleic Acid, Polysorbate 20, Propylene Glycol, Triethanolamine, Natural Fragrance, Carbomer

**INTRODUCTION:** This pamphlet provides a summary of information about MÜV Evolve Transdermal Gels. Please read this pamphlet thoroughly and keep it with your medicine. If you have any questions, please consult your physician.

MÜV Evolve Transdermal Gel contains 500 mg active ingredient extracted and distilled from *Cannabis* spp. plants meticulously grown without the use of harmful pesticides.

**IMPORTANT:** Your physician has recommended this medication for your use only. **DO NOT LET ANYONE ELSE USE IT. KEEP THIS MEDICINE OUT OF THE REACH OF CHILDREN AND PETS.**

If a child puts gel on skin or in mouth, remove immediately with towel and soap and water and contact a poison control center. Do not drive a car or operate heavy machinery until you know how this medication affects you. While taking this medication, do not drink alcohol or take other drugs that have an effect on the central nervous system, such as antidepressants or sleep aids.

Unless advised by your physician, do not use this drug if you are pregnant or nursing.

**CLINICAL PHARMACOLOGY:** The endocannabinoid system is a series of receptors located throughout the body, which control important biological functions. Your body produces its own endocannabinoids, and cannabinoids like  $\Delta^9$ -tetrahydrocannabinol (THC) and cannabidiol (CBD) engage these receptors to produce various effects that can promote symptom relief. THC is an agonist of the CB<sub>1</sub> receptor located throughout the central nervous system (CNS) and brain. For this reason, THC is known as the psychoactive cannabinoid, which can produce euphoria or the “high” commonly associated with cannabis use. THC is also a partial agonist of the CB<sub>2</sub> receptor system, so drug interactions with this target should also be considered. Transdermal administration of THC can produce euphoria that accompanies other delivery methods (inhaled, oral, sublingual, etc.), but effects can vary person to person. Typically, transdermal delivery of THC does not produce the same level of euphoria when delivered via other dosing methods. But unlike oral dosing, transdermal delivery negates the hepatic first-pass effect and minimizes the metabolic byproduct, 11-hydroxy THC, which has significantly higher psychoactivity than its predecessor, THC. Because of its unique mode of action, CBD is non-psychoactive and can even reduce the side effects of THC. When delivered transdermally CBD avoids hepatic-first pass metabolism that is common with oral delivery, which leads to CBD degradation.

The Evolve Encapsulation Technology used in this product is a patent-pending encapsulation of cannabis-derived compounds using FDA-approved ingredients that quickens onset time and improves the overall bioavailability of cannabinoids. Common effects of THC include euphoria, relaxation, sedation, increased appetite, and nausea reduction while side effects can include decreased blood pressure, anxiety, or paranoia. Lethal overdose has never been reported with THC or cannabis use.

Due to CB<sub>1</sub> activity in the cerebral cortex, hypothalamus, and other regions of the brain and spinal cord, THC can regulate neurological pain reception. THC has been shown to be effective as conventional opiate treatments for pain reduction and analgesia (Noyes et al. 1975; Maurer et al. 1990; Hosking and Zajicek, 2008). Clinical evidence has also shown THC to be effective in pain management and muscle spasticity/spasms especially in multiple sclerosis (MS) and other chronic pain conditions (Darmani, 2001; De Petrocellis et al. 2000). Inflammation and pain can be alleviated locally or systemically (whole-body) via transdermal application of THC. The anti-inflammatory effects of THC can suppress gastrointestinal symptoms of inflammatory bowel diseases such as Crohn's disease (Naftali et al. 2013). Clinical data has also proven THC to be effective for appetite stimulation in patients with human immunodeficiency virus (HIV) and acquired immune deficiency syndrome (AIDS). Additionally, THC acts as an anti-emetic and stimulates appetite for cancer patients undergoing chemotherapy treatments.

Sleep is an important aspect of palliative care and quality of life; and anandamide, a naturally occurring human endocannabinoid, has been shown to illicit sleep responses and improve REM sleep (Murillo-Rodriguez et al. 1998). Anandamide activates CB<sub>1</sub> receptors, and similarly, THC significantly decreases the time it takes to fall asleep, and once asleep THC led to fewer awakenings during the first half of the night (Cousens and DiMascio, 1973; Nicholson et al. 2004).

There are numerous targets for CBD, but the earliest studies have shown potent neuroprotective properties through antioxidant properties and improvement of certain neurodegenerative disorders (US Patent; Liput et al. 2013). Potent anti-epileptic effects have been demonstrated clinically for particular forms of epilepsy with neuronal protection in the hippocampus (GWPH Trials). Inflammation can be alleviated locally or systemically (whole-body) via transdermal application of CBD (Lodzki et al. 2003).

Due to its interaction with hydroxytryptamine serotonin receptors, CBD has anti-anxiety and anti-depressant effects

(de Mello Schier et al. 2014). These indications have also been corroborated with social anxiety disorders (Bergamaschi et al. 2011) and THC-induced psychosis (Zuardi et al. 1982; Bhattacharyya et al. 2010). The anti-inflammatory effects of CBD coupled with the location of CB<sub>2</sub> receptors in the GI system could provide relief for certain inflammatory bowel diseases (Esposito et al. 2012). The natural terpenes used in MÜV CBD Evolve Transdermal Gel are steam distilled and derived from organically grown plants such as mint and bergamot oil; these essential oils along with CBD can enhance the entourage effect to promote mental clarity and relieve stress.

Using defined ratios of THC and CBD leads to what is known as the cannabis “entourage effect” which leads to synergistic effects between compounds that would otherwise not be present with single compound treatment. A 1:1 ratio of THC and CBD therefore has both the effects of THC (euphoria, appetite stimulation, pain reduction) as well as CBD (for anxiety, inflammation, and spasticity improvement). Studies have shown that this ratio does not significantly attenuate the effects of THC, suggesting no significant decline in cognitive function (Jacobs et al. 2016). Clinical trials have shown that THC and CBD, co-administered in a 1:1 ratio, demonstrated a marked improvement in sleep quality for conditions ranging from multiple sclerosis, neuropathic pain, intractable cancer pain, and rheumatoid arthritis (Russo et al. 2007). The natural terpenes used in MÜV THC/CBD (1:1) Evolve Transdermal Gel are steam distilled and derived from organically grown plants such as ginger and orange; these essential oils provide a refreshing scent that can be used throughout the day and enhance the entourage effect of THC and CBD.

**INDICATIONS AND USE:** MÜV Evolve Transdermal Gels can be used for acute conditions from its fast-acting properties due to the Evolve encapsulation. Additionally, the high lipid solubility of the cannabinoids can create a “reservoir effect” in the stratum corneum of the skin (Touitou and Fabin, 1988) and provide longer sustained delivery times of THC and CBD. Conditions for use include: cancer, glaucoma, HIV and AIDS, MS, hepatitis C, amyotrophic lateral sclerosis (ALS), Crohn's disease, Parkinson's disease, or any other debilitating medical condition that a physician believes would outweigh the potential risks for a patient. It can also be used as a palliative care treatment due to its improvements on general outlook including pain, spasticity, weight loss, anxiety, and sleep promotion.

**DOSAGE AND ADMINISTRATION:** When starting a new dosing regimen, it is crucially important that medication is administered in small doses (known as titrating) to determine an effective dose and to minimize side effects. One pump is administered by fully depressing the dispenser on the bottle; one pump contains 150 mg of gel that includes 15 mg active ingredient. It is best to start with one pump at first to know how this product will affect you before increasing the dose.

Common application sites for systemic or full-body effects of MÜV Evolve Transdermal Gel include the inside of the wrist, top of the foot, inner thighs, or the back or sides of the neck. The gel can also be applied to areas of discomfort or inflammation such as joints, hands, or feet for localized symptom relief. Prior to use, clean the application site with soap and water and ensure that the skin is dried and intact before applying the gel. A preferred method for systemic delivery would be to apply the gel directly to the inside of your wrist and rub your wrists together until fully absorbed. Alternatively, dispense the gel onto the affected area and rub in until it is fully absorbed. Try to vary applications sites as this will help achieve more uniform and efficient dosing. Typical onset time for MÜV THC Evolve Transdermal Gel is less than 10 minutes and delivery continues for 2-4 hours. Avoid contact with eyes, nose, and mouth after applying gel and wash hands thoroughly if hands or fingers are used for application.

**CONTRAINDICATIONS:** Patients known to be allergic to cannabis should not use cannabis products.

Relative contraindications include coronary heart diseases, hypotension, drug abuse, alcohol abuse, mania, depression, bipolar, schizophrenia, or a prior negative reaction to cannabis.

**WARNINGS AND PRECAUTIONS:** Be sure to notify your physician if you have any of the following:

- Have or had history of heart disorders because of occasional low blood pressure, high blood pressure, rapid heart rate, palpitations, or fainting;
- Present or past issues with drug abuse;

- Present or past issues with alcohol abuse;
- Have or had mental health problems (depression, mania, bipolar, or schizophrenia);
- Present or past history of epilepsy, seizure disorders, and/or seizure-like activity;
- Have any allergies to drugs;
- Are pregnant or nursing, or intend to become pregnant.

If you become pregnant while taking any MÜV cannabis-infused product, stop using immediately and consult with your physician.

MÜV Evolve Transdermal Gels should be used with caution, particularly with children and elderly patients, as there are few studies in these patient populations. A physician should monitor children under the age of 18 closely as THC can have adverse effects on brain development.

When consulting with your physician, please include all current medications (both prescription and non-prescription) as MÜV Evolve THC Transdermal Gels can theoretically interact with other drug therapies. Avoid grapefruit or grapefruit juice and other CYP450 inhibitors as these can adversely affect THC treatments. Adverse reactions could also occur with alcohol and other drugs that affect the CNS (such as Valium, Librium, Xanax, Seconal, Nembutal, or Phenobarbital).

**ADVERSE REACTIONS:** Tell your physician if any symptoms persist or worsen with time:

- Cardiovascular: palpitations, tachycardia, vasodilation, hypotension (low blood pressure);
- Digestive: dry mouth, abdominal pain, nausea, vomiting, diarrhea, constipation, anorexia, excessive appetite, hepatic enzyme elevation;
- Nervous System: euphoria, drowsiness, memory loss, confusion, anxiety, paranoia, depersonalization, hallucinations, poor balance, dizziness, somnolence, nightmares, depression, difficulty speaking;
- Musculoskeletal: myalgias;
- Skin: flushing, sweating, irritation at application site;
- Ocular: conjunctivitis, impaired vision, irritation;
- Body: chills, headache, fatigue;
- Respiratory: cough, rhinitis, sinusitis.

### **MÜV 20 mg THC (72 Hour Extended Release) Transdermal Patches 20 mg THC, 20 mg CBD, and 20 mg THC/CBD (1:1)**

**THC DOSE:** One Patch delivers 20 mg THC and <5 mg CBD  
**CBD DOSE:** One Patch delivers 20 mg CBD and <5 mg THC  
**THC/CBD (1:1) DOSE:** One Patch delivers 10 mg THC and 10 mg CBD

**TOTAL PRODUCT DOSES:** 1 Patch (18 cm<sup>2</sup>)  
**INACTIVE INGREDIENTS** (All USP or Pharma-grade): Water, Ethanol, Acrylates Adhesive, Diethylene Glycol Monoethyl Ether, Polysorbate 20, and Hydroxyethyl Cellulose within an Ethylene Vinyl Acetate Membrane and Polyethylene Backing

**INTRODUCTION:** This pamphlet provides a summary of information about MÜV (72 Hour Extended Release) Transdermal Patches. Please read this pamphlet thoroughly and keep it with your medicine. If you have any questions, please consult your physician.

MÜV Transdermal Patch contains 20 mg active ingredient extracted and distilled from *Cannabis* spp. plants meticulously grown without the use of harmful pesticides.

**IMPORTANT:** Your physician has recommended this medication for your use only. **DO NOT LET ANYONE ELSE USE IT. KEEP THIS MEDICINE OUT OF THE REACH OF CHILDREN AND PETS.**

If a child puts patch on skin or in mouth, remove immediately and contact a poison control center. Do not drive a car or operate heavy machinery until you know how this medication affects you. While taking this medication, do not drink alcohol or take other drugs that have an effect on the central nervous system, such as antidepressants or sleep aids.

Unless advised by your physician, do not use this drug if you are pregnant or nursing.

**CLINICAL PHARMACOLOGY:** The endocannabinoid system is a series of receptors located throughout the body, which control important biological functions. Your body produces its own endocannabinoids, and cannabinoids like  $\Delta^9$ -tetrahydrocannabinol (THC) and cannabidiol (CBD) engage these receptors to produce various effects that can promote symptom relief. THC is an agonist of the CB<sub>1</sub> receptor located throughout the central nervous system (CNS) and brain. For this reason, THC is known as the psychoactive cannabinoid, which can produce euphoria or the “high” commonly associated with cannabis use. THC is also a partial agonist of the CB<sub>2</sub> receptor system, so drug interactions with this target should also be considered. CB<sub>1</sub> receptors are located throughout the central nervous system (CNS) and brain; while CB<sub>2</sub> receptors are associated with the immune and gastrointestinal (GI) systems and also found in the brain but not as densely as CB<sub>1</sub> receptors. CBD works indirectly, as an antagonist, on the CB<sub>1</sub> and CB<sub>2</sub> receptors by interacting with other receptors to disrupt endocannabinoid function and binding. Because of its unique mode of action, CBD is non-psychoactive and can even reduce the side effects of THC.

Transdermal administration of THC can produce euphoria that accompanies other delivery methods (inhaled, oral, sublingual, etc.), but effects can vary person to person. Typically, transdermal delivery of THC does not produce the same level of euphoria when delivered via other dosing methods. Unlike oral dosing, transdermal delivery negates the hepatic first-pass effect and minimizes the metabolic byproduct, 11-hydroxy THC, which has significantly higher psychoactivity than its predecessor, THC.

The Evolve Encapsulation Technology used in this product is a patent-pending encapsulation of cannabis-derived compounds using FDA-approved ingredients that quickens onset time and improves the overall bioavailability of cannabinoids. Common effects of THC include euphoria, relaxation, sedation, increased appetite, and nausea reduction while side effects can include decreased blood pressure, anxiety, or paranoia. Lethal overdose has never been reported with THC or cannabis use.

Due to CB<sub>1</sub> activity in the cerebral cortex, hypothalamus, and other regions of the brain and spinal cord, THC can regulate neurological pain reception. THC has been shown to be effective as conventional opiate treatments for pain reduction and analgesia (Noyes et al. 1975; Maurer et al. 1990; Hosking and Zajicek, 2008). Clinical evidence has also shown THC to be effective in pain management and muscle spasticity/spasms especially in multiple sclerosis (MS) and other chronic pain conditions (Darmani, 2001; De Petrocellis et al. 2000). Inflammation and pain can be alleviated locally or systemically (whole-body) via transdermal application of THC, which have provided remission of inflammatory bowel diseases such as Crohn’s (Naftali et al. 2013). Clinical data has also proven THC to be effective for appetite stimulation in patients with human immunodeficiency virus (HIV) and acquired immune deficiency syndrome (AIDS). Additionally, THC acts as an anti-emetic and stimulates appetite for cancer patients undergoing chemotherapy treatments.

Sleep is an important aspect of palliative care and quality of life; and anandamide, a naturally occurring human endocannabinoid, has been shown to illicit sleep responses and improve REM sleep (Murillo-Rodriguez et al. 1998). Anandamide activates CB<sub>1</sub> receptors, and similarly, THC significantly decreases the time it takes to fall asleep, and once asleep THC led to fewer awakenings during the first half of the night (Cousens and DiMascio, 1973; Nicholson et al. 2004).

There are numerous targets for CBD, but the earliest studies have shown potent neuroprotective properties through antioxidant properties and improvement of certain neurodegenerative disorders (US Patent; Liput et al. 2013). Potent anti-epileptic effects have been demonstrated clinically for particular forms of epilepsy with neuronal protection in the hippocampus (GWPH Trials). Inflammation can be alleviated locally or systemically (whole-body) via transdermal application of CBD (Lodzki et al. 2003). Due to its interaction with hydroxytryptamine serotonin receptors, CBD has anti-anxiety and anti-depressant effects (de Mello Schier et al. 2014). These indications have also been corroborated with social anxiety disorders (Bergamaschi et al. 2011) and THC-induced psychosis (Zuardi et al. 1982; Bhattacharyya et al. 2010). The anti-inflammatory effects of CBD coupled with the location of CB<sub>2</sub> receptors in the GI system could

provide relief for certain inflammatory bowel diseases (Esposito et al. 2012).

Using defined ratios of THC and CBD leads to what is known as the cannabis “entourage effect” which leads to synergistic effects between compounds that would otherwise not be present with individual treatment. A 1:1 ratio of THC and CBD therefore has both the effects of THC (euphoria, appetite stimulation, pain reduction) as well as CBD (for anxiety, inflammation, and spasticity improvement). Studies have shown that this ratio does not significantly attenuate the effects of THC suggesting no significant decline in cognitive function with this ratio (Jacobs et al. 2016). Clinical trials have shown that co-administered THC and CBD (1:1) demonstrated a marked improvement in sleep quality for conditions ranging from multiple sclerosis, neuropathic pain, intractable cancer pain, and rheumatoid arthritis (Russo et al. 2007).

**INDICATIONS AND USE:** MÜV (72 Hour Extended Release) Transdermal Patches can be used for both acute and chronic conditions due to its fast-acting nature and sustained drug release properties. Additionally, the high lipid solubility of the cannabinoids can create a “reservoir effect” in the stratum corneum of the skin (Touitou and Fabin, 1988) and provide longer sustained delivery times of THC and CBD. Conditions for use include: cancer, glaucoma, HIV and AIDS, MS, hepatitis C, amyotrophic lateral sclerosis (ALS), Crohn’s disease, Parkinson’s disease, or any other debilitating medical condition that a physician believes would outweigh the potential risks for a patient. It can also be used as a palliative care treatment due to its improvements on general outlook including pain, spasticity, weight loss, anxiety, and sleep promotion.

**DOSAGE AND ADMINISTRATION:** When starting a new dosing regimen, it is crucially important that medication is administered in small doses (known as titrating) to determine an effective dose and to minimize side effects. One patch (5.0 cm x 3.6 cm) constitutes one dose, and the patch cannot be cut or punctured. However, the patch can be removed and effects will dissipate within 15 minutes; the patch can be reapplied to the skin and medical tape can be used to affix a patch that is loose on skin.

Common application sites for MÜV Transdermal Patches include the upper arm, chest, abdomen, or any venous region with minimal hair. Prior to use, clean the application site with soap and water or rubbing alcohol, ensure that the skin is dried and intact before applying patch. Remove the clear liner to expose the adhesive (sticky) side of the backing and press patch firmly in place and hold using the palm of the hand for 30 seconds to ensure uniform adhesion. Typical onset time for MÜV (72 Hour Extended Release) Transdermal Patches are less than 30 minutes and delivery continues through 72 hours. Wear patch throughout dosing period; warm water (such as a hot shower) will help facilitate patch removal. Rubbing alcohol can be used to remove excess adhesive during application or after patch removal. Change application areas every three days if a new patch is to be applied.

**CONTRAINDICATIONS:** Patients known to be allergic to cannabis should not use cannabis products.

Relative contraindications include: coronary heart diseases, hypotension, drug abuse, alcohol abuse, mania, depression, bipolar, schizophrenia, or a prior negative reaction to cannabis.

**WARNINGS AND PRECAUTIONS:** Be sure to notify your physician if you have any of the following:

- Have or had history of heart disorders because of occasional low blood pressure, high blood pressure, rapid heart rate, palpitations, or fainting;
- Present or past issues with drug abuse;
- Present or past issues with alcohol abuse;
- Have or had mental health problems (depression, mania, bipolar, or schizophrenia);
- Present or past history of epilepsy, seizure disorders, and/or seizure-like activity;
- Have any allergies to drugs;
- Are pregnant or nursing, or intend to become pregnant.

If you become pregnant while taking any MÜV cannabis-infused product, stop using immediately and consult with your physician.

MÜV (72 Hour Extended Release) Transdermal Patches should be used with caution, particularly with children and elderly patients, as there are few studies in these patient populations. A physician should monitor children under the age of 18 closely as THC can have adverse effects on brain development.

When consulting with your physician, please include all current medications (both prescription and non-prescription) as MÜV Transdermal Patches can theoretically interact with other drug therapies. Avoid grapefruit or grapefruit juice and other CYP450 inhibitors as these can adversely affect THC treatments. Adverse reactions could also occur with alcohol and other drugs that affect the CNS (such as Valium, Librium, Xanax, Seconal, Nembutal, or Phenobarbital).

**ADVERSE REACTIONS:** Tell your physician if any symptoms persist or worsen with time:

- Cardiovascular: palpitations, tachycardia, vasodilation, hypotension (low blood pressure);
- Digestive: dry mouth, abdominal pain, nausea, vomiting, diarrhea, constipation, anorexia, excessive appetite, hepatic enzyme elevation;
- Nervous System: euphoria, drowsiness, memory loss, confusion, anxiety, paranoia, depersonalization, hallucinations, poor balance, dizziness, somnolence, nightmares, depression, difficulty speaking;
- Musculoskeletal: myalgias;
- Skin: flushing, sweating, irritation at application site;
- Ocular: conjunctivitis, impaired vision;
- Body: chills, headache, fatigue;
- Respiratory: cough, rhinitis, sinusitis.

## ORAL DELIVERY METHODS

### MÜV EnCaps Tinctures 300 mg THC, 300 mg CBD, and 150 mg THC and 150 mg CBD (1:1)

DOSE: 1 drop equals 0.5 mg or 10 mg/1 mL  
THC TOTAL PRODUCT DOSES: 1 bottle contains 300 mg THC and <25 mg CBD, with 30 1 mL doses per bottle  
THC/CBD PRODUCT: 1 bottle contains 150 mg THC and 150 mg CBD, with 30 1 mL doses per bottle  
CBD TOTAL PRODUCT DOSES: 1 bottle contains 300 mg CBD and <25 mg THC, with 30 1 mL doses per bottle  
INACTIVE INGREDIENTS (All Natural): Vegetable Glycerin, Ethanol, Medium Chain Triglycerides, Water, Sunflower Oil, Oleic Acid, Natural Terpenes, and *Quillaja saponaria* Extract

**INTRODUCTION:** This pamphlet provides a summary of information about MÜV Tinctures. Please read this pamphlet thoroughly and keep it with your medicine. If you have any questions, please consult your physician.

MÜV EnCaps Tinctures contain 300 mg active ingredient extracted and distilled from *Cannabis* spp. plants meticulously grown without the use of harmful pesticides.

**IMPORTANT:** Your physician has recommended this medication for your use only. DO NOT LET ANYONE ELSE USE IT. KEEP THIS MEDICINE OUT OF THE REACH OF CHILDREN AND PETS.

If a child puts contents on skin or in mouth, remove immediately and contact a poison control center. Do not drive a car or operate heavy machinery until you know how this medication affects you. While taking this medication, do not drink alcohol or take other drugs that have an effect on the central nervous system, such as antidepressants or sleep aids.

Unless advised by your physician, do not use this drug if you are pregnant or nursing.

**CLINICAL PHARMACOLOGY:** The endocannabinoid system is a series of receptors located throughout the body, which control important biological functions. Your body produces its own endocannabinoids, and cannabinoids like  $\Delta^9$ -tetrahydrocannabinol (THC) and cannabidiol (CBD) engage these receptors to produce various effects that can promote symptom relief. THC is an agonist of the CB<sub>1</sub> receptor located throughout the central nervous system (CNS) and brain. For this reason, THC is known as the psychoactive cannabinoid, which can produce euphoria or the “high”

commonly associated with cannabis use. CB<sub>1</sub> receptors are located throughout the central nervous system (CNS) and brain; while CB<sub>2</sub> receptors are associated with the immune and gastrointestinal systems and also found in the brain but not as densely as CB<sub>1</sub> receptors. CBD works indirectly, as an antagonist, on the CB<sub>1</sub> and CB<sub>2</sub> receptors by interacting with other receptors to disrupt endocannabinoid function and binding. Because of its unique mode of action, CBD is non-psychoactive and can even reduce the side effects of THC.

The Tincture can be dosed sublingually, under the tongue, but some of the medication will be swallowed and will be absorbed by the gastrointestinal tract (GIT). Oral ingestion of cannabinoids undergoes a first-pass effect through the liver, causing oxidation of THC to 11-hydroxy-THC, a constituent that is significantly more psychoactive than THC itself. The effects of oral delivery can be delayed up to 2 hours and can last 6-8 hours.

The Evolve Encapsulation Technology used in this product is a patent-pending encapsulation of cannabis-derived compounds using FDA-approved ingredients that quickens onset time and improves the overall bioavailability of cannabinoids. Common effects of THC include euphoria, relaxation, sedation, increased appetite, and nausea reduction while side effects can include decreased blood pressure, anxiety, or paranoia. Common effects of CBD include relaxation, sedation, and alertness, depending on dose amount and individual. Side effects of CBD are rare and mild but could include anxiety, depression, dizziness, or feeling faint. Lethal overdose has never been reported with THC, CBD or cannabis use.

Due to CB<sub>1</sub> activity in the cerebral cortex, hypothalamus, and other regions of the brain and spinal cord, THC can regulate neurological pain reception. THC has been shown to be effective as conventional opiate treatments for pain reduction and analgesia (Noyes et al. 1975; Maurer et al. 1990; Hosking and Zajicek, 2008). Clinical evidence has also shown THC to be effective in pain management and muscle spasticity/spasms especially in multiple sclerosis (MS) and other chronic pain conditions (Darmani, 2001; De Petrocellis et al. 2000). Clinical data has also proven THC to be effective for appetite stimulation in patients with human immunodeficiency virus (HIV) and acquired immune deficiency syndrome (AIDS). Additionally, THC acts as an anti-emetic and stimulates appetite for cancer patients undergoing chemotherapy treatments.

Sleep is an important aspect of palliative care and quality of life; and anandamide, a naturally occurring human endocannabinoid, has been shown to illicit sleep responses and improve REM sleep (Murillo-Rodriguez et al. 1998). Anandamide activates CB<sub>1</sub> receptors, and similarly, THC significantly decreases the time it takes to fall asleep, and once asleep THC led to fewer awakenings during the first half of the night (Cousens and DiMascio, 1973; Nicholson et al. 2004).

There are numerous targets for CBD, but the earliest studies have shown potent neuroprotective properties through antioxidant properties and improvement of certain neurodegenerative disorders (US Patent; Liput et al. 2013). Potent anti-epileptic effects have been demonstrated clinically for particular forms of epilepsy with neuronal protection in the hippocampus (GWPH Trials). CBD has anti-anxiety and anti-depressant effects (de Mello Schier et al. 2014) through their interaction with hydroxytryptamine serotonin receptors (de Mello Schier et al. 2014); these indications have also been corroborated with social anxiety disorders (Bergamaschi et al. 2011) and THC-induced psychosis (Zuardi et al. 1982; Bhattacharyya et al. 2010). The anti-inflammatory effects of CBD coupled with the location of CB<sub>2</sub> receptors in the GI system could provide relief for certain inflammatory bowel diseases (Esposito et al. 2012).

**INDICATIONS AND USE:** MÜV Tinctures are ideally used sublingually for a fast acting treatment option; some medication will be swallowed and undergo slower GIT absorption. Conditions for use include: cancer, glaucoma, HIV and AIDS, MS, hepatitis C, amyotrophic lateral sclerosis (ALS), Crohn's disease, Parkinson's disease, or any other debilitating medical condition that a physician believes would outweigh the potential risks for a patient. It can also be used as a palliative care treatment due to its improvements on general outlook including pain, spasticity, weight loss, anxiety, and sleep promotion.

**DOSAGE AND ADMINISTRATION:** When starting a new dosing regimen, it is crucially important that medication is administered in small doses (known as titrating) to determine an effective dose and to minimize side effects.

Patients with little or no prior cannabis experience should be particularly careful; as little as one drop (0.5 mg) should be recommended for new patients.

Shake your MÜV Tinctures well before each use, and draw up the desired dose into the dropper. Dispense the medication under your tongue and hold for 10-20 seconds prior to swallowing. The unique formulation of this product also means that it can be added and mixed into your favorite food or water-based beverage. This allows for greater product flexibility and minimizing dosing taste. Mix well if incorporated into food or beverages.

**CONTRAINDICATIONS:** Patients known to be allergic to cannabis should not use cannabis products.

Relative contraindications include: coronary heart diseases, hypotension, drug abuse, alcohol abuse, mania, depression, bipolar, schizophrenia, or a prior negative reaction to cannabis.

**WARNINGS AND PRECAUTIONS:** Be sure to notify your physician if you have any of the following:

- Have or had history of heart disorders because of occasional low blood pressure, high blood pressure, rapid heart rate, palpitations, or fainting;
- Present or past issues with drug abuse;
- Present or past issues with alcohol abuse;
- Have or had mental health problems (depression, mania, bipolar, or schizophrenia);
- Present or past history of epilepsy, seizure disorders, and/or seizure-like activity;
- Have any allergies to drugs;
- Are pregnant or nursing, or intend to become pregnant.

If you become pregnant while taking any MÜV cannabis-infused product, stop using immediately and consult with your physician.

MÜV Tinctures should be used with caution, particularly with children and elderly patients, as there are few studies in these patient populations. A physician should monitor children under the age of 18 closely as THC can have adverse effects on brain development.

When consulting with your physician, please include all current medications (both prescription and non-prescription) as MÜV Tinctures can theoretically interact with other drug therapies. Avoid grapefruit or grapefruit juice and other CYP450 inhibitors as these can adversely affect THC treatments. Adverse reactions could also occur with alcohol and other drugs that affect the CNS (such as Valium, Librium, Xanax, Seconal, Nembutal, or Phenobarbital).

**ADVERSE REACTIONS:** Tell your physician if any symptoms persist or worsen with time:

- Cardiovascular: palpitations, tachycardia, vasodilation, hypotension (low blood pressure);
- Digestive: dry mouth, abdominal pain, nausea, vomiting, diarrhea, constipation, anorexia, excessive appetite, hepatic enzyme elevation;
- Nervous System: euphoria, drowsiness, memory loss, confusion, anxiety, paranoia, depersonalization, hallucinations, poor balance, dizziness, somnolence, nightmares, depression, difficulty speaking;
- Musculoskeletal: myalgias;
- Skin: flushing, sweating, irritation;
- Ocular: conjunctivitis, impaired vision, irritation;
- Body: chills, headache, fatigue;
- Respiratory: cough, rhinitis, sinusitis.

### MÜV Strain-Specific Cannabis Tincture

DOSE: 1 drop equals ~1mg THC; 1mL equals ~20mg THC  
TOTAL PRODUCT DOSES: 1 bottle contains 600mg THC and <50mg CBD, with 30 1mL doses per bottle.  
INACTIVE INGREDIENTS: Medium Chain Triglycerides, Sunflower Oil, Peppermint Essential Oil

**INTRODUCTION:** This pamphlet provides a summary of information about MÜV Strain-Specific Cannabis Tincture. Please read this pamphlet thoroughly and keep it with your medicine. If you have any questions, please consult your physician.

MÜV Strain-Specific Cannabis Tinctures contain 600mg active ingredient extracted from *Cannabis* spp. plants meticulously grown without the use of harmful pesticides.

**IMPORTANT:** Your physician has recommended this medication for your use only. DO NOT LET ANYONE ELSE USE IT. KEEP THIS MEDICINE OUT OF THE REACH OF CHILDREN AND PETS.

If a child puts contents on skin or in mouth, remove immediately and contact a poison control center. Do not drive a car or operate heavy machinery until you know how this medication affects you. While taking this medication, do not drink alcohol or take other drugs that have an effect on the central nervous system, such as antidepressants or sleep aids.

Unless advised by your physician, do not use this drug if you are pregnant or nursing.

**CLINICAL PHARMACOLOGY:** The endocannabinoid system is a series of receptors located throughout the body that control important biological functions. Your body produces its own endocannabinoids, and cannabinoids like Δ<sup>9</sup>-tetrahydrocannabinol (THC) and cannabidiol (CBD) engage these receptors to produce various effects that can promote symptom relief. CB<sub>1</sub> receptors are located throughout the central nervous system (CNS) and brain; while CB<sub>2</sub> receptors are associated with the immune and gastrointestinal systems and also found in the brain but not as densely as CB<sub>1</sub> receptors. CBD works indirectly, as an antagonist, on the CB<sub>1</sub> and CB<sub>2</sub> receptors by interacting with other receptors to disrupt endocannabinoid function and binding. Because of its unique mode of action, CBD is non-psychoactive and can even reduce the side effects of THC.

The Strain-Specific Cannabis Tincture can be dosed orally, or taken with food or beverage and will be absorbed by the gastrointestinal tract (GIT). Oral ingestion of cannabinoids undergoes a first-pass effect in the liver, causing oxidation of THC to 11-hydroxy-THC, a constituent that is significantly more psychoactive than THC itself. The effects of oral delivery can be delayed up to 2 hours and can last 4-6 hours. Common effects of THC include euphoria, relaxation, sedation, increased appetite, and nausea reduction while side effects can include decreased blood pressure, anxiety, or paranoia. Common effects of CBD include relaxation, sedation, and alertness, depending on dose amount and individual. Lethal overdose has never been reported with THC cannabis use.

Due to CB<sub>1</sub> activity in the cerebral cortex, hypothalamus, and other regions of the brain and spinal cord, THC can regulate neurological pain reception. THC has been shown to be effective as conventional opiate treatments for pain reduction and analgesia (Noyes et al. 1975; Maurer et al. 1990; Hosking and Zajicek, 2008). Clinical evidence has also shown THC to be effective in pain management and muscle spasticity/spasms especially in multiple sclerosis (MS) and other chronic pain conditions (Darmani, 2001; De Petrocellis et al. 2000). Clinical data has also proven THC to be effective for appetite stimulation in patients with human immunodeficiency virus (HIV) and acquired immune deficiency syndrome (AIDS). Additionally, THC acts as an anti-emetic and stimulates appetite for cancer patients undergoing chemotherapy treatments. CBD has anti-anxiety and anti-depressant effects (de Mello Schier et al. 2014); these indications have also been corroborated with social anxiety disorders (Bergamaschi et al. 2011) and THC-induced psychosis (Zuardi et al. 1982; Bhattacharyya et al. 2010).

Sleep is an important aspect of palliative care and quality of life; and anandamide, a naturally occurring human endocannabinoid, has been shown to illicit sleep responses and improve REM sleep (Murillo-Rodriguez et al. 1998). Anandamide activates CB<sub>1</sub> receptors, and similarly, THC significantly decreases the time it takes to fall asleep, and once asleep THC led to fewer awakenings during the first half of the night (Cousens and DiMascio, 1973; Nicholson et al. 2004).

**INDICATIONS AND USE:** MÜV Strains-Specific Tincture is used orally for a fast acting, potent treatment option. Conditions for use include: cancer, glaucoma, HIV and AIDS, MS, hepatitis C, amyotrophic lateral sclerosis (ALS), Crohn's disease, Parkinson's disease, or any other debilitating medical condition that a physician believes would outweigh the potential risks for a patient. It can also be used as a palliative care treatment due to its

improvements on general outlook including pain, spasticity, weight loss, anxiety, and sleep promotion.

**DOSAGE AND ADMINISTRATION:** When starting a new dosing regimen it is crucially important that medication is administered in small doses (known as titrating) to determine an effective dose and to minimize side effects. Patients with little or no prior cannabis experience should be particularly careful; as little as one drop (1mg) should be recommended for new patients.

**DIRECTIONS FOR USE:** Shake bottle well before use and draw up the desired dose into the dropper. Dispense the medication under your tongue, or add to food or beverage.

**CONTRAINDICATIONS:** Patients known to be allergic to cannabis should not use cannabis products.

Relative contraindications include coronary heart diseases, hypotension, drug abuse, alcohol abuse, mania, depression, bipolar, schizophrenia, or a prior negative reaction to cannabis.

**WARNINGS AND PRECAUTIONS:** Be sure to notify your physician if you have any of the following:

- Have or had history of heart disorders because of occasional low blood pressure, high blood pressure, rapid heart rate, palpitations, or fainting;
- Present or past issues with drug abuse;
- Present or past issues with alcohol abuse;
- Have or had mental health problems (depression, mania, bipolar, or schizophrenia);
- Present or past history of epilepsy, seizure disorders, and/or seizure-like activity;
- Have any allergies to drugs;
- Are pregnant or nursing, or intend to become pregnant.

If you become pregnant while taking any MÜV cannabis-infused product, stop using immediately and consult with your physician.

MÜV Strain-Specific Cannabis Tincture should be used with caution, particularly with children and elderly patients, as there are few studies in these patient populations. A physician should monitor children under the age of 18 closely as THC can have adverse effects on brain development. When consulting with your physician, please include all current medications (both prescription and non-prescription) as MÜV Strain-Specific Cannabis Tincture can theoretically interact with other drug therapies. Avoid grapefruit or grapefruit juice and other CYP450 inhibitors as these can adversely affect THC treatments. Adverse reactions could also occur with alcohol and other drugs that affect the CNS (such as Valium, Librium, Xanax, Seconal, Nembutal, or Phenobarbital).

**ADVERSE REACTIONS:** Tell your physician if any symptoms persist or worsen with time:

- Cardiovascular: palpitations, tachycardia, vasodilation, hypotension (low blood pressure);
- Digestive: dry mouth, abdominal pain, nausea, vomiting, diarrhea, constipation, anorexia, excessive appetite, hepatic enzyme elevation;
- Nervous System: euphoria, drowsiness, memory loss, confusion, anxiety, paranoia, depersonalization, hallucinations, poor balance, dizziness, somnolence, nightmares, depression, difficulty speaking;
- Musculoskeletal: myalgias;
- Skin: flushing, sweating, irritation;
- Ocular: conjunctivitis, impaired vision, irritation;
- Body: chills, headache, fatigue;
- Respiratory: cough, rhinitis, sinusitis.

### **MÜV EnCaps Capsules (THC)**

DOSE: 1 capsule equals 10 mg THC and <1 mg CBD  
TOTAL PRODUCT DOSES: 1 bottle contains 30 capsules and a total of 300 mg of THC and <30 mg CBD

### **MÜV EnCaps Capsules (CBD)**

DOSE: 1 capsule equals 30 mg CBD and <2 mg THC

TOTAL PRODUCT DOSES: 1 bottle contains 30 capsules and a total of 900 mg of CBD and <90 mg THC

### **MÜV EnCaps Capsules (THC/CBD)**

DOSE: 1 capsule equals 10 mg THC and 10 mg CBD  
TOTAL PRODUCT DOSES: 1 bottle contains 30 capsules and a total of 300 mg of THC and 300 mg CBD

### **MÜV EnCaps Capsules (RSO)**

DOSE: 1 capsule equals 25 mg THC and <5 mg CBD  
TOTAL PRODUCT DOSES: 1 bottle contains 30 capsules and a total of 750 mg of THC and <150 mg CBD

**INACTIVE INGREDIENTS:** Microcrystalline Cellulose, Silicon Dioxide, Starch, High Oleic Sunflower Oil, Polysorbate 80, Ethanol, Water, and Magnesium Stearate in a Vegetable Capsule

**INTRODUCTION:** This pamphlet provides a summary of information about MÜV EnCaps. Please read this pamphlet thoroughly and keep it with your medicine. If you have any questions, please consult your physician.

MÜV EnCaps contain varying levels of  $\Delta^9$ -tetrahydrocannabinol (THC) and cannabidiol (CBD) extracted and distilled from *Cannabis* spp. plants meticulously grown without the use of harmful pesticides.

**IMPORTANT:** Your physician has recommended this medication for your use only. **DO NOT LET ANYONE ELSE USE IT. KEEP THIS MEDICINE OUT OF THE REACH OF CHILDREN AND PETS.**

If a child puts contents on skin or in mouth, remove immediately and contact a poison control center. Do not drive a car or operate heavy machinery until you know how this medication affects you. While taking this medication, do not drink alcohol or take other drugs that have an effect on the central nervous system, such as antidepressants or sleep aids.

Unless advised by your physician, do not use this drug if you are pregnant or nursing.

**CLINICAL PHARMACOLOGY:** The endocannabinoid system is a series of receptors located throughout the body, which control important biological functions. Your body produces its own endocannabinoids, and cannabinoids like  $\Delta^9$ -tetrahydrocannabinol (THC) and cannabidiol (CBD) engage these receptors to produce various effects that can promote symptom relief. THC is an agonist of the CB<sub>1</sub> receptor located throughout the central nervous system (CNS) and brain. For this reason, THC is known as the psychoactive cannabinoid, which can produce euphoria or the “high” commonly associated with cannabis use.

The EnCaps are to be swallowed and will be absorbed by the gastrointestinal tract (GIT). Oral ingestion of cannabinoids undergoes a first-pass effect through the liver, causing oxidation of THC to 11-hydroxy-THC, a constituent that is significantly more psychoactive than THC itself. The effects of oral delivery can be delayed as much as 1 hour and generally last 4-6 hours.

Common effects of THC include euphoria, relaxation, sedation, increased appetite, and nausea reduction while side effects can include decreased blood pressure, anxiety, or paranoia. Common effects of CBD include relaxation, sedation, and alertness, depending on dose amount and individual. Side effects of CBD are rare and mild but could include anxiety, depression, dizziness, or feeling faint. Lethal overdose has never been reported with CBD or cannabis use. Lethal overdose has never been reported with THC, CBD, or cannabis use.

Due to CB<sub>1</sub> activity in the cerebral cortex, hypothalamus, and other regions of the brain and spinal cord, THC can regulate neurological pain reception. THC has been shown to be effective as conventional opiate treatments for pain reduction and analgesia (Noyes et al. 1975; Maurer et al. 1990; Hosking and Zajicek, 2008). Clinical evidence has also shown THC to be effective in pain management and muscle spasticity/spasms especially in multiple sclerosis (MS) and other chronic pain conditions (Darmani, 2001; De Petrocellis et al. 2000). Clinical data has also proven THC to be effective for appetite stimulation in patients with human immunodeficiency virus (HIV) and acquired immune deficiency syndrome (AIDS). Additionally, THC acts as an anti-emetic and stimulates appetite for cancer patients undergoing chemotherapy treatments.

There are numerous targets for CBD, but the earliest studies have shown potent neuroprotective properties through antioxidant properties and improvement of certain neurodegenerative disorders (US Patent; Liput et al. 2013). Potent anti-epileptic effects have been demonstrated clinically for particular forms of epilepsy with neuronal protection in the hippocampus (GWPH Trials). CBD has anti-anxiety and anti-depressant effects (de Mello Schier et al. 2014) through their interaction with hydroxytryptamine serotonin receptors (de Mello Schier et al. 2014); these indications have also been corroborated with social anxiety disorders (Bergamaschi et al. 2011) and THC-induced psychosis (Zuardi et al. 1982; Bhattacharyya et al. 2010). The anti-inflammatory effects of CBD coupled with the location of CB<sub>2</sub> receptors in the GI system could provide relief for certain inflammatory bowel diseases (Esposito et al. 2012).

Sleep is an important aspect of palliative care and quality of life; and anandamide, a naturally occurring human endocannabinoid, has been shown to illicit sleep responses and improve REM sleep (Murillo-Rodriguez et al. 1998). Anandamide activates CB<sub>1</sub> receptors, and similarly, THC significantly decreases the time it takes to fall asleep, and once asleep THC led to fewer awakenings during the first half of the night (Cousens and DiMascio, 1973; Nicholson et al. 2004).

**INDICATIONS AND USE:** MÜV EnCaps are used orally. Conditions for use include: cancer, glaucoma, HIV and AIDS, MS, hepatitis C, amyotrophic lateral sclerosis (ALS), Crohn’s disease, Parkinson’s disease, or any other debilitating medical condition that a physician believes would outweigh the potential risks for a patient. It can also be used as a palliative care treatment due to its improvements on general outlook including pain, spasticity, weight loss, anxiety, and sleep promotion.

**DOSAGE AND ADMINISTRATION:** When starting a new dosing regimen, it is crucially important that medication is administered in small doses (known as titrating) to determine an effective dose and to minimize side effects. Patients with little or no prior cannabis experience should be particularly careful; one capsule should be recommended for new patients. Each capsule can be identified by its corresponding colored band THC (green), CBD (white), THC/CBD (blue), and RSO (red).

Swallow the capsule as quickly as possible after placing in mouth. Swallow the capsule whole and do not crush, chew, break, or open it. Capsule may take 1 or more hours to take effect

**CONTRAINDICATIONS:** Patients known to be allergic to cannabis should not use cannabis products.

Relative contraindications include: coronary heart diseases, hypotension, drug abuse, alcohol abuse, mania, depression, bipolar, schizophrenia, or a prior negative reaction to cannabis.

**WARNINGS AND PRECAUTIONS:** Be sure to notify your physician if you have any of the following:

- Have or had history of heart disorders because of occasional low blood pressure, high blood pressure, rapid heart rate, palpitations, or fainting;
- Present or past issues with drug abuse;
- Present or past issues with alcohol abuse;
- Have or had mental health problems (depression, mania, bipolar, or schizophrenia);
- Present or past history of epilepsy, seizure disorders, and/or seizure-like activity;
- Have any allergies to drugs;
- Are pregnant or nursing, or intend to become pregnant.

If you become pregnant while taking any MÜV cannabis-infused product, stop using immediately and consult with your physician.

MÜV EnCaps should be used with caution, particularly with children and elderly patients, as there are few studies in these patient populations. A physician should monitor children under the age of 18 closely as THC can have adverse effects on brain development.

When consulting with your physician, please include all current medications (both prescription and non-prescription) as MÜV En-Caps can theoretically interact with other drug therapies. Avoid grapefruit or grapefruit

juice and other CYP450 inhibitors as these can adversely affect THC treatments. Adverse reactions could also occur with alcohol and other drugs that affect the CNS (such as Valium, Librium, Xanax, Seconal, Nembutal, or Phenobarbital).

**ADVERSE REACTIONS:** Tell your physician if any symptoms persist or worsen with time:

- Cardiovascular: palpitations, tachycardia, vasodilation, hypotension (low blood pressure);
- Digestive: dry mouth, abdominal pain, nausea, vomiting, diarrhea, constipation, anorexia, excessive appetite, hepatic enzyme elevation;
- Nervous System: euphoria, drowsiness, memory loss, confusion, anxiety, paranoia, depersonalization, hallucinations, poor balance, dizziness, somnolence, nightmares, depression, difficulty speaking;
- Musculoskeletal: myalgias;
- Skin: flushing, sweating, irritation;
- Ocular: conjunctivitis, impaired vision, irritation;
- Body: chills, headache, fatigue;
- Respiratory: cough, rhinitis, sinusitis.

### **MÜV Oral Spray 150 mg THC**

DOSE: 1.9 mg per spray  
THC TOTAL PRODUCT DOSES: 1 bottle contains a total of 150 mg THC and <25 mg CBD, with 75 total doses per bottle  
INACTIVE INGREDIENTS: (All Natural) Medium Chain Triglycerides, Ethanol, Natural Terpenes, and Propylene Glycol

**INTRODUCTION:** This pamphlet provides a summary of information about MÜV Oral Sprays. Please read this pamphlet thoroughly and keep it with your medicine. If you have any questions, please consult your physician.

MÜV Oral Sprays contain 150 mg active ingredient extracted and distilled from *Cannabis* spp. plants meticulously grown without the use of harmful pesticides.

**IMPORTANT:** Your physician has recommended this medication for your use only. **DO NOT LET ANYONE ELSE USE IT. KEEP THIS MEDICINE OUT OF THE REACH OF CHILDREN AND PETS.**

If a child puts contents on skin or in mouth, remove immediately and contact a poison control center. Do not drive a car or operate heavy machinery until you know how this medication affects you. While taking this medication, do not drink alcohol or take other drugs that have an effect on the central nervous system, such as antidepressants or sleep aids.

Unless advised by your physician, do not use this drug if you are pregnant or nursing.

**CLINICAL PHARMACOLOGY:** The endocannabinoid system is a series of receptors located throughout the body, which control important biological functions. Your body produces its own endocannabinoids, and cannabinoids like  $\Delta^9$ -tetrahydrocannabinol (THC) and cannabidiol (CBD) engage these receptors to produce various effects that can promote symptom relief. THC is an agonist of the CB<sub>1</sub> receptor located throughout the central nervous system (CNS) and brain. For this reason, THC is known as the psychoactive cannabinoid, which can produce euphoria or the “high” commonly associated with cannabis use. CB<sub>1</sub> receptors are located throughout the central nervous system (CNS) and brain; while CB<sub>2</sub> receptors are associated with the immune and gastrointestinal systems and also found in the brain but not as densely as CB<sub>1</sub> receptors. CBD works indirectly, as an antagonist, on the CB<sub>1</sub> and CB<sub>2</sub> receptors by interacting with other receptors to disrupt endocannabinoid function and binding. Because of its unique mode of action, CBD is non-psychoactive and can even reduce the side effects of THC.

The Oral Spray can be dosed sublingually, under the tongue, but some of the medication will be swallowed and be absorbed by the gastrointestinal tract (GIT). Oral ingestion of cannabinoids undergoes a first-pass effect in the liver, causing oxidation of THC to 11-hydroxy-THC, a constituent that is significantly more psychoactive than THC itself. The effects of oral delivery can be delayed up to 2 hours and can last 4-6 hours. Common effects of THC include euphoria, relaxation, sedation, increased appetite, and nausea reduction while side effects can include decreased blood

pressure, anxiety, or paranoia. Common effects of CBD include relaxation, sedation, and alertness, depending on dose amount and individual. Side effects of CBD are rare and mild but could include anxiety, depression, dizziness, or feeling faint. Lethal overdose has never been reported with THC, CBD or cannabis use.

Due to CB<sub>1</sub> activity in the cerebral cortex, hypothalamus, and other regions of the brain and spinal cord, THC can regulate neurological pain reception. THC has been shown to be effective as conventional opiate treatments for pain reduction and analgesia (Noyes et al. 1975; Maurer et al. 1990; Hosking and Zajicek, 2008). Clinical evidence has also shown THC to be effective in pain management and muscle spasticity/spasms especially in multiple sclerosis (MS) and other chronic pain conditions (Darmani, 2001; De Petrocellis et al. 2000). Clinical data has also proven THC to be effective for appetite stimulation in patients with human immunodeficiency virus (HIV) and acquired immune deficiency syndrome (AIDS). Additionally, THC acts as an anti-emetic and stimulates appetite for cancer patients undergoing chemotherapy treatments.

Sleep is an important aspect of palliative care and quality of life; and anandamide, a naturally occurring human endocannabinoid, has been shown to illicit sleep responses and improve REM sleep (Murillo-Rodriguez et al. 1998). Anandamide activates CB<sub>1</sub> receptors, and similarly, THC significantly decreases the time it takes to fall asleep, and once asleep THC led to fewer awakenings during the first half of the night (Cousens and DiMascio, 1973; Nicholson et al. 2004).

There are numerous targets for CBD, but the earliest studies have shown potent neuroprotective properties through antioxidant properties and improvement of certain neurodegenerative disorders (US Patent; Liput et al. 2013). Potent anti-epileptic effects have been demonstrated clinically for particular forms of epilepsy with neuronal protection in the hippocampus (GWPH Trials). CBD has anti-anxiety and anti-depressant effects (de Mello Schier et al. 2014) through their interaction with hydroxytryptamine serotonin receptors (de Mello Schier et al. 2014); these indications have also been corroborated with social anxiety disorders (Bergamaschi et al. 2011) and THC-induced psychosis (Zuardi et al. 1982; Bhattacharyya et al. 2010). The anti-inflammatory effects of CBD coupled with the location of CB<sub>2</sub> receptors in the GI system could provide relief for certain inflammatory bowel diseases (Esposito et al. 2012).

**INDICATIONS AND USE:** MÜV Oral Sprays are used sublingually for a fast acting treatment option; some medication will be swallowed and undergo slower GIT absorption. Conditions for use include: cancer, glaucoma, HIV and AIDS, MS, hepatitis C, amyotrophic lateral sclerosis (ALS), Crohn’s disease, Parkinson’s disease, or any other debilitating medical condition that a physician believes would outweigh the potential risks for a patient. It can also be used as a palliative care treatment due to its improvements on general outlook including pain, spasticity, weight loss, anxiety, and sleep promotion.

**DOSAGE AND ADMINISTRATION:** When starting a new dosing regimen, it is crucially important that medication is administered in small doses (known as titrating) to determine an effective dose and to minimize side effects. Patients with little or no prior cannabis experience should be particularly careful; one spray is a recommended starting dose of 1.9 mg.

To use MÜV Oral Sprays, remove cap from bottle and spray directly under your tongue. Hold the medication under your tongue for 10-20 seconds before swallowing.

**CONTRAINDICATIONS:** Patients known to be allergic to cannabis should not use cannabis products.

Relative contraindications include: coronary heart diseases, hypotension, drug abuse, alcohol abuse, mania, depression, bipolar, schizophrenia, or a prior negative reaction to cannabis.

**WARNINGS AND PRECAUTIONS:** Be sure to notify your physician if you have any of the following:

- Have or had history of heart disorders because of occasional low blood pressure, high blood pressure, rapid heart rate, palpitations, or fainting;
- Present or past issues with drug abuse;
- Present or past issues with alcohol abuse;

- Have or had mental health problems (depression, mania, bipolar, or schizophrenia);
- Present or past history of epilepsy, seizure disorders, and/or seizure-like activity;
- Have any allergies to drugs;
- Are pregnant or nursing, or intend to become pregnant.

If you become pregnant while taking any MÜV cannabis-infused product, stop using immediately and consult with your physician.

MÜV Oral Sprays should be used with caution, particularly with children and elderly patients, as there are few studies in these patient populations. A physician should monitor children under the age of 18 closely as THC can have adverse effects on brain development.

When consulting with your physician, please include all current medications (both prescription and non-prescription) as MÜV Oral Sprays can theoretically interact with other drug therapies. Avoid grapefruit or grapefruit juice and other CYP450 inhibitors as these can adversely affect THC treatments. Adverse reactions could also occur with alcohol and other drugs that affect the CNS (such as Valium, Librium, Xanax, Seconal, Nembutal, or Phenobarbital).

**ADVERSE REACTIONS:** Tell your physician if any symptoms persist or worsen with time:

- Cardiovascular: palpitations, tachycardia, vasodilation, hypotension (low blood pressure);
- Digestive: dry mouth, abdominal pain, nausea, vomiting, diarrhea, constipation, anorexia, excessive appetite, hepatic enzyme elevation;
- Nervous System: euphoria, drowsiness, memory loss, confusion, anxiety, paranoia, depersonalization, hallucinations, poor balance, dizziness, somnolence, nightmares, depression, difficulty speaking;
- Musculoskeletal: myalgias;
- Skin: flushing, sweating, irritation;
- Ocular: conjunctivitis, impaired vision, irritation;
- Body: chills, headache, fatigue;
- Respiratory: cough, rhinitis, sinusitis.

### **MÜV Metered Distillate Syringe**

DOSE: 25 mg per “drop”  
TOTAL PRODUCT DOSES: 1 syringe contains a total of 1000 mg active ingredient, with 40 total doses per syringe  
INACTIVE INGREDIENTS: Reintroduced Cannabis Terpenes

### **MÜV Metered RSO Syringe**

DOSE: 25 mg per “drop”  
TOTAL PRODUCT DOSES: 1 syringe contains a total of 1000 mg active ingredient, with 40 total doses per syringe  
INACTIVE INGREDIENTS: None

**INTRODUCTION:** This pamphlet provides a summary of information about MÜV Metered Syringes. Please read this pamphlet thoroughly and keep it with your medicine. If you have any questions, please consult your physician.

MÜV Metered Syringes contain 1000 mg active ingredient extracted from *Cannabis* spp. plants meticulously grown without the use of harmful pesticides.

**IMPORTANT:** Your physician has recommended this medication for your use only. **DO NOT LET ANYONE ELSE USE IT. KEEP THIS MEDICINE OUT OF THE REACH OF CHILDREN AND PETS.**

If a child puts contents on skin or in mouth, remove immediately and contact a poison control center. Do not drive a car or operate heavy machinery until you know how this medication affects you. While taking this medication, do not drink alcohol or take other drugs that have an effect on the central nervous system, such as antidepressants or sleep aids.

Unless advised by your physician, do not use this drug if you are pregnant or nursing.

**CLINICAL PHARMACOLOGY:** The endocannabinoid system is a series of receptors located throughout the body that control important biological functions. Your body produces its own endocannabinoids, and cannabinoids like Δ9-tetrahydrocannabinol (THC) and cannabidiol (CBD) engage these receptors to produce various effects that can promote symptom relief. CB<sub>1</sub> receptors are located throughout the central nervous system (CNS) and brain; while CB<sub>2</sub> receptors are associated with the immune and gastrointestinal systems and also found in the brain but not as densely as CB<sub>1</sub> receptors. CBD works indirectly, as an antagonist, on the CB<sub>1</sub> and CB<sub>2</sub> receptors by interacting with other receptors to disrupt endocannabinoid function and binding. Because of its unique mode of action, CBD is non-psychoactive and can even reduce the side effects of THC.

The Metered Syringe can be dosed sublingually, or taken with food and will be absorbed by the gastrointestinal tract (GIT). Oral ingestion of cannabinoids undergoes a first-pass effect in the liver, causing oxidation of THC to 11-hydroxy-THC, a constituent that is significantly more psychoactive than THC itself. The effects of oral delivery can be delayed up to 2 hours and can last 4-6 hours. Common effects of THC include euphoria, relaxation, sedation, increased appetite, and nausea reduction while side effects can include decreased blood pressure, anxiety, or paranoia. Common effects of CBD include relaxation, sedation, and alertness, depending on dose amount and individual. Side effects of CBD are rare and mild but could include anxiety, depression, dizziness, or feeling faint. Lethal overdose has never been reported with THC, CBD or cannabis use.

Due to CB<sub>1</sub> activity in the cerebral cortex, hypothalamus, and other regions of the brain and spinal cord, THC can regulate neurological pain reception. THC has been shown to be effective as conventional opiate treatments for pain reduction and analgesia (Noyes et al. 1975; Maurer et al. 1990; Hosking and Zajicek, 2008). Clinical evidence has also shown THC to be effective in pain management and muscle spasticity/spasms especially in multiple sclerosis (MS) and other chronic pain conditions (Darmani, 2001; De Petrocellis et al. 2000). Clinical data has also proven THC to be effective for appetite stimulation in patients with human immunodeficiency virus (HIV) and acquired immune deficiency syndrome (AIDS). Additionally, THC acts as an anti-emetic and stimulates appetite for cancer patients undergoing chemotherapy treatments.

Sleep is an important aspect of palliative care and quality of life; and anandamide, a naturally occurring human endocannabinoid, has been shown to illicit sleep responses and improve REM sleep (Murillo-Rodriguez et al. 1998). Anandamide activates CB<sub>1</sub> receptors, and similarly, THC significantly decreases the time it takes to fall asleep, and once asleep THC led to fewer awakenings during the first half of the night (Cousens and DiMascio, 1973; Nicholson et al. 2004).

There are numerous targets for CBD, but the earliest studies have shown potent neuroprotective properties through antioxidant properties and improvement of certain neurodegenerative disorders (US Patent; Liput et al. 2013). Potent anti-epileptic effects have been demonstrated clinically for particular forms of epilepsy with neuronal protection in the hippocampus (GWPH Trials). CBD has anti-anxiety and anti-depressant effects (de Mello Schier et al. 2014) through their interaction with hydroxytryptamine serotonin receptors (de Mello Schier et al. 2014); these indications have also been corroborated with social anxiety disorders (Bergamaschi et al. 2011) and THC-induced psychosis (Zuardi et al. 1982; Bhattacharyya et al. 2010). The anti-inflammatory effects of CBD coupled with the location of CB<sub>2</sub> receptors in the GI system could provide relief for certain inflammatory bowel diseases (Esposito et al. 2012).

**INDICATIONS AND USE:** MÜV Metered Syringes are used sublingually for a fast acting treatment option; some medication will be swallowed and undergo slower GIT absorption. Conditions for use include: cancer, glaucoma, HIV and AIDS, MS, hepatitis C, amyotrophic lateral sclerosis (ALS), Crohn's disease, Parkinson's disease, or any other debilitating medical condition that a physician believes would outweigh the potential risks for a patient. It can also be used as a palliative care treatment due to its improvements on general outlook including pain, spasticity, weight loss, anxiety, and sleep promotion.

**DOSAGE AND ADMINISTRATION:** When starting a new dosing regimen it is crucially important that medication is administered in small doses (known as titrating) to determine an effective dose and to minimize side effects. Patients with little or no prior cannabis experience should

be particularly careful; one rotation or "click" is a recommended starting dose of 25 mg active ingredient.

To use MÜV Metered Syringes, remove cap from syringe and rotate the ribbed dial clockwise until you hear a "click" (about half a turn). The oil within the syringe will start to flow out of the metal tip. Note: it may take 3 or more clicks when first using Metered Dispenser since it has to be primed first. Place the oil under your tongue, onto, or into your favorite food and swallow.

**CONTRAINDICATIONS:** Patients known to be allergic to cannabis should not use cannabis products.

Relative contraindications include coronary heart diseases, hypotension, drug abuse, alcohol abuse, mania, depression, bipolar, schizophrenia, or a prior negative reaction to cannabis.

**WARNINGS AND PRECAUTIONS:** Be sure to notify your physician if you have any of the following:

- Have or had history of heart disorders because of occasional low blood pressure, high blood pressure, rapid heart rate, palpitations, or fainting;
- Present or past issues with drug abuse;
- Present or past issues with alcohol abuse;
- Have or had mental health problems (depression, mania, bipolar, or schizophrenia);
- Present or past history of epilepsy, seizure disorders, and/or seizure-like activity;
- Have any allergies to drugs;
- Are pregnant or nursing, or intend to become pregnant.

If you become pregnant while taking any MÜV cannabis-infused product, stop using immediately and consult with your physician.

MÜV Metered Syringes should be used with caution, particularly with children and elderly patients, as there are few studies in these patient populations. A physician should monitor children under the age of 18 closely as THC can have adverse effects on brain development.

When consulting with your physician, please include all current medications (both prescription and non-prescription) as MÜV Metered Syringes can theoretically interact with other drug therapies. Avoid grapefruit or grapefruit juice and other CYP450 inhibitors as these can adversely affect CBD treatments. Adverse reactions could also occur with alcohol and other drugs that affect the CNS (such as Valium, Librium, Xanax, Seconal, Nembutal, or Phenobarbital).

**ADVERSE REACTIONS:** Tell your physician if any symptoms persist or worsen with time:

- Cardiovascular: palpitations, tachycardia, vasodilation, hypotension (low blood pressure);
- Digestive: dry mouth, abdominal pain, nausea, vomiting, diarrhea, constipation, anorexia, excessive appetite, hepatic enzyme elevation;
- Nervous System: euphoria, drowsiness, memory loss, confusion, anxiety, paranoia, depersonalization, hallucinations, poor balance, dizziness, somnolence, nightmares, depression, difficulty speaking;
- Musculoskeletal: myalgias;
- Skin: flushing, sweating, irritation;
- Ocular: conjunctivitis, impaired vision, irritation;
- Body: chills, headache, fatigue;
- Respiratory: cough, rhinitis, sinusitis.

**Wana Soft Chews**  
**Blueberry (Indica), Mango (Sativa),**  
**Watermelon (Hybrid),**  
**Strawberry Lemonade (CBD/THC 1:1)**

**DOSE:**  
*Blueberry, Mango, Watermelon:* 1 chew ~10 mg THC  
*Strawberry Lemonade:* 1 chew ~10mg THC, 10mg CBD

**TOTAL PRODUCT DOSES:**  
*Blueberry, Mango, Watermelon:* 1 package contains ~100mg THC, with 10 doses per package.  
*Strawberry Lemonade:* 1 package contains ~100mg THC and ~100mg CBD, with 10 doses per package.

**INACTIVE INGREDIENTS:** Sugar, Corn Syrup, Pectin, Citric Acid, Natural Flavoring, Sodium Citrate, Terpenes

**INTRODUCTION:** This pamphlet provides a summary of information about Wana Soft Chews. Please read this pamphlet thoroughly and keep it with your medicine. If you have any questions, please consult your physician.

Wana Soft Chews contain 100mg active ingredient (Blueberry, Mango, and Watermelon), or 200mg active ingredient (Strawberry Lemonade), extracted from *Cannabis* spp. plants meticulously grown without the use of harmful pesticides.

**IMPORTANT:** Your physician has recommended this medication for your use only. **DO NOT LET ANYONE ELSE USE IT. KEEP THIS MEDICINE OUT OF THE REACH OF CHILDREN AND PETS.**

If a child puts contents on skin or in mouth, remove immediately and contact a poison control center. Do not drive a car or operate heavy machinery until you know how this medication affects you. While taking this medication, do not drink alcohol or take other drugs that have an effect on the central nervous system, such as antidepressants or sleep aids.

Unless advised by your physician, do not use this drug if you are pregnant or nursing.

**CLINICAL PHARMACOLOGY:** The endocannabinoid system is a series of receptors located throughout the body that control important biological functions. Your body produces its own endocannabinoids, and cannabinoids like Δ9-tetrahydrocannabinol (THC) and cannabidiol (CBD) engage these receptors to produce various effects that can promote symptom relief. CB<sub>1</sub> receptors are located throughout the central nervous system (CNS) and brain; while CB<sub>2</sub> receptors are associated with the immune and gastrointestinal systems and also found in the brain but not as densely as CB<sub>1</sub> receptors. CBD works indirectly, as an antagonist, on the CB<sub>1</sub> and CB<sub>2</sub> receptors by interacting with other receptors to disrupt endocannabinoid function and binding. Because of its unique mode of action, CBD is non-psychoactive and can even reduce the side effects of THC.

Wana Soft Chews are dosed orally and will be absorbed by the gastrointestinal tract (GIT). Oral ingestion of cannabinoids undergoes a first-pass effect in the liver, causing oxidation of THC to 11-hydroxy-THC, a constituent that is significantly more psychoactive than THC itself. The effects of oral delivery can be delayed up to 2 hours and can last 4-6 hours. Common effects of THC include euphoria, relaxation, sedation, increased appetite, and nausea reduction while side effects can include decreased blood pressure, anxiety, or paranoia. Common effects of CBD include relaxation, sedation, and alertness, depending on dose amount and individual. Lethal overdose has never been reported with THC cannabis use.

Due to CB<sub>1</sub> activity in the cerebral cortex, hypothalamus, and other regions of the brain and spinal cord, THC can regulate neurological pain reception. THC has been shown to be effective as conventional opiate treatments for pain reduction and analgesia (Noyes et al. 1975; Maurer et al. 1990; Hosking and Zajicek, 2008). Clinical evidence has also shown THC to be effective in pain management and muscle spasticity/spasms especially in multiple sclerosis (MS) and other chronic pain conditions (Darmani, 2001; De Petrocellis et al. 2000). Clinical data has also proven THC to be effective for appetite stimulation in patients with human immunodeficiency virus (HIV) and acquired immune deficiency syndrome (AIDS). Additionally, THC acts as an anti-emetic and stimulates appetite for cancer patients undergoing chemotherapy treatments. CBD has anti-anxiety and anti-depressant effects (de Mello Schier et al. 2014); these indications have also been corroborated with social anxiety disorders (Bergamaschi et al. 2011) and THC-induced psychosis (Zuardi et al. 1982; Bhattacharyya et al. 2010).

Sleep is an important aspect of palliative care and quality of life; and anandamide, a naturally occurring human endocannabinoid, has been shown to illicit sleep responses and improve REM sleep (Murillo-Rodriguez et al. 1998). Anandamide activates CB<sub>1</sub> receptors, and similarly, THC significantly decreases the time it takes to fall asleep, and once asleep THC led to fewer awakenings during the first half of the night (Cousens and DiMascio, 1973; Nicholson et al. 2004).

**INDICATIONS AND USE:**

Wana Soft Chews are used orally for a potent edible treatment option. Conditions for use include: cancer, glaucoma, HIV and AIDS, MS, hepatitis C, amyotrophic lateral sclerosis (ALS), Crohn's disease, Parkinson's disease, or any other debilitating medical condition that a physician believes would outweigh the potential risks for a patient. It can also be used as a palliative care treatment due to its improvements on general outlook including pain, spasticity, weight loss, anxiety, and sleep promotion.

**DOSAGE AND ADMINISTRATION:** When starting a new dosing regimen it is crucially important that medication is administered in small doses to determine an effective dose and to minimize side effects. For patients with little or no prior cannabis experience it is recommended to start with a low dose, such as half a chew. Wait at least one hour before consuming more product.

**DIRECTIONS FOR USE:** Chew desired dose thoroughly and swallow.

**CONTRAINDICATIONS:** Patients known to be allergic to cannabis should not use cannabis products.

Relative contraindications include coronary heart diseases, hypotension, drug abuse, alcohol abuse, mania, depression, bipolar, schizophrenia, or a prior negative reaction to cannabis.

**WARNINGS AND PRECAUTIONS:** Be sure to notify your physician if you have any of the following:

- Have or had history of heart disorders because of occasional low blood pressure, high blood pressure, rapid heart rate, palpitations, or fainting;
- Present or past issues with drug abuse;
- Present or past issues with alcohol abuse;
- Have or had mental health problems (depression, mania, bipolar, or schizophrenia);
- Present or past history of epilepsy, seizure disorders, and/or seizure-like activity;
- Have any allergies to drugs;
- Are pregnant or nursing, or intend to become pregnant.

If you become pregnant while taking any MÜV cannabis-infused product, stop using immediately and consult with your physician.

Wana Soft Chews should be used with caution, particularly with children and elderly patients, as there are few studies in these patient populations. A physician should monitor children under the age of 18 closely as THC can have adverse effects on brain development. When consulting with your physician, please include all current medications (both prescription and non-prescription) as Wana Soft Chews can theoretically interact

with other drug therapies. Avoid grapefruit or grapefruit juice and other CYP450 inhibitors as these can adversely affect THC treatments. Adverse reactions could also occur with alcohol and other drugs that affect the CNS (such as Valium, Librium, Xanax, Seconal, Nembutal, or Phenobarbital).

**ADVERSE REACTIONS:** Tell your physician if any symptoms persist or worsen with time:

- Cardiovascular: palpitations, tachycardia, vasodilation, hypotension (low blood pressure);
- Digestive: dry mouth, abdominal pain, nausea, vomiting, diarrhea, constipation, anorexia, excessive appetite, hepatic enzyme elevation;
- Nervous System: euphoria, drowsiness, memory loss, confusion, anxiety, paranoia, depersonalization, hallucinations, poor balance, dizziness, somnolence, nightmares, depression, difficulty speaking;
- Musculoskeletal: myalgias;
- Skin: flushing, sweating, irritation;
- Ocular: conjunctivitis, impaired vision, irritation;
- Body: chills, headache, fatigue;
- Respiratory: cough, rhinitis, sinusitis.