









# Factsheet: Cannabis legalization

## Products and dosage forms of recreational cannabis

|                     | Cannabis flowers vaporized   | Oral extracts   | Vapes / E-cigarettes   | Edibles  |
|---------------------|--|---|--|--|
| <b>Image</b>        |   |    |   |   |
| <b>Target group</b> | Broad consumer group who prefer lung-friendly forms of consumption (without combustion and tobacco)  | Broad consumer group who prefer oral ingestion to inhalation  | Consumers who appreciate simple, fast and inconspicuous use; occasional users  | Broad consumer group, including "pleasure consumers" and occasional users.   |
| <b>Product</b>      | Dried cannabis flowers   | Extract of active ingredients (e.g. by CO2 / ethanol)   | Cannabis extract (partly dissolved in carrier oil) vaporized in e-cigarette  | Food products enriched with cannabis extract (e.g. candies, gummy bears, chocolate, pastries, beverages)   |
| <b>Ingredients</b>  | Full spectrum of cannabis genetic make-up (cannabinoids, terpenes)   | Full extract contains THC, CBD and terpenes   | Extracted ingredients / isolate and carrier oil, if applicable   | Extracted ingredients dissolved in food or beverages   |
| <b>Application</b>  | Inhalation through the use of a vaporizer, which vaporizes active substances in the flower   | Oral ingestion of the drops which are absorbed via the digestive tract  | Inhalation of the carrier oil, in which the ingredients are dissolved  | Oral ingestion, absorption via digestive tract   |
| <b>Pro</b>          | <ul style="list-style-type: none"> <li>- No combustion process and no tobacco -&gt; Hardly any absorption of harmful substances</li> <li>- Fast onset</li> <li>- High dosage control</li> <li>- Terpenes are retained and optimally absorbed (Gieringer, 2001; 2004, Hazekamp, 2006; Loflin &amp; Earleywine, 2015)</li> </ul> | <ul style="list-style-type: none"> <li>- Long duration of action</li> <li>- Long product shelf life</li> <li>- No lung damage</li> <li>- Good dosage control (if individual dose is known)</li> </ul> | <ul style="list-style-type: none"> <li>- Rapid onset of action</li> <li>- High dosage control</li> <li>- Long shelf life</li> <li>- With certified carrier oil less lung damage than smoking.</li> </ul> | <ul style="list-style-type: none"> <li>- Advantageous from a health perspective (no lung damage)</li> <li>- Long duration of action</li> <li>- Easy handling</li> <li>- High dosage control, with uniform dosage units</li> <li>- Range of differentiation possibilities</li> <li>- Long shelf life</li> </ul> |
| <b>Contra</b>       | <ul style="list-style-type: none"> <li>- Expensive vaporizer needed</li> <li>- Convinced joint smokers are difficult to convert</li> </ul>   | <ul style="list-style-type: none"> <li>- Late onset of action can lead to overdose if dose is unknown</li> </ul>  | <ul style="list-style-type: none"> <li>- Could encourage increased use due to ease of use</li> <li>- Long-term effects of carrier oils only initially explored (Jensen et al., 2015)</li> </ul>          | <ul style="list-style-type: none"> <li>- Later onset of action and good taste may lead to unintentional overdose</li> <li>- Could stimulate consumption because of combined reward effect (added sugar)</li> <li>- Risk of accidental ingestion by minors</li> </ul>   |

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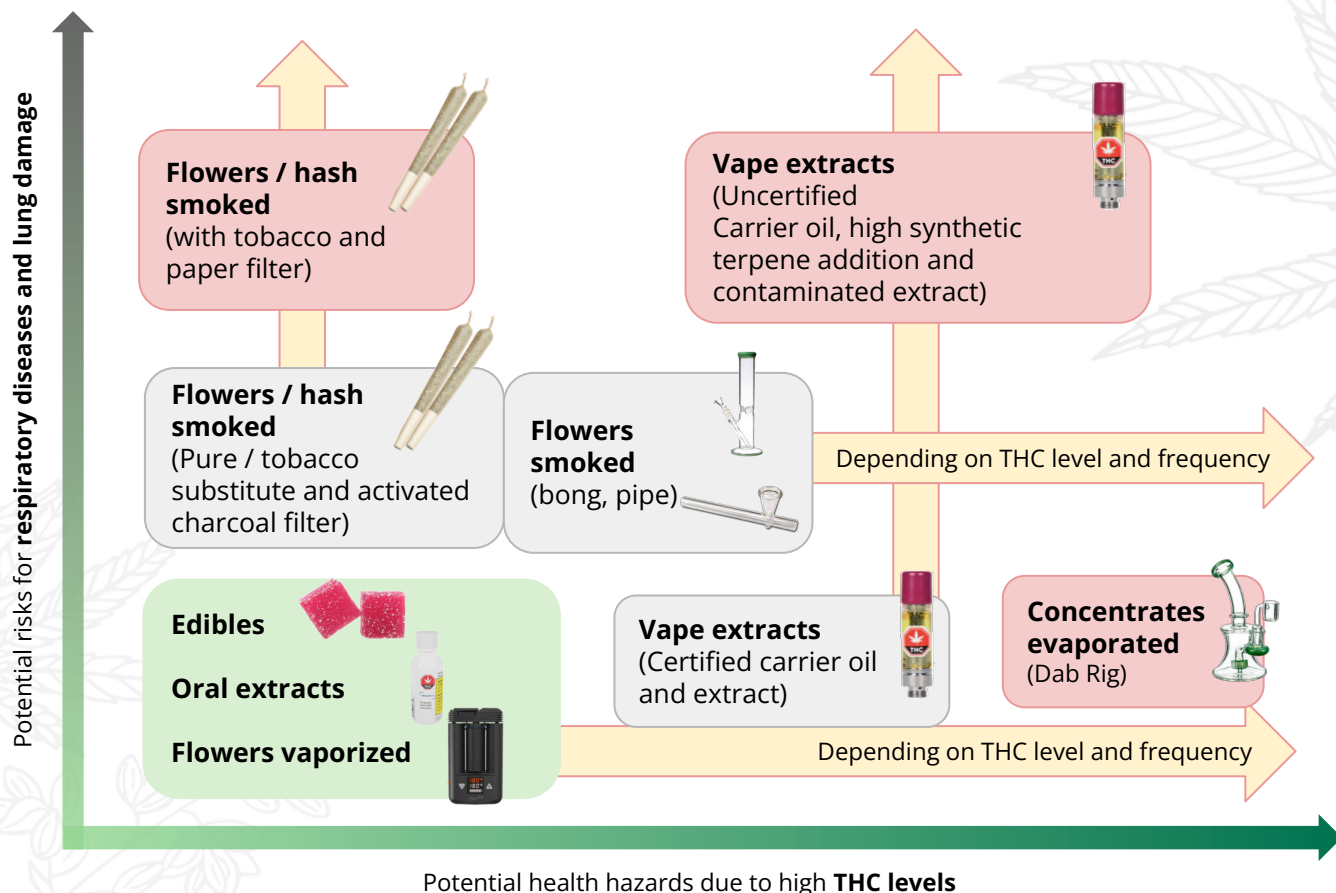
|                     | Cannabis flowers smoked  | Hashish   | Bong   | Dabbing  |
|---------------------|--|---|--|--|
| <b>Image</b>        |   |    |   |   |
| <b>Target group</b> | Broad consumer group , traditional consumption type  | Broad consumer group , traditional type of consumption  | Experienced consumers  | Experienced consumers  |
| <b>Product</b>      | Dried cannabis flowers   | Wax-like product formed when the trichomes (resin glands) of cannabis are concentrated and compacted into a solid block   | Glass water pipe in which cannabis flowers and/or hash are smoked  | Concentrates (Crystals, Wax, Shatter, Life-Resin, Rosin, Hashish)  |
| <b>Ingredients</b>  | Active ingredients of cannabis genetics, but great loss of them due to combustion process, optionally with tobacco or tobacco substitute.  | Wax of trichomes and its ingredients, Leaf residues   | Active ingredients of the cannabis plant, but loss rate due to water filtration process  | High-percentage concentrate from CO2 or BHO extraction with different viscosity and terpene content  |
| <b>Application</b>  | Inhalation of smoke produced through the combustion process in joint / pre-roll or pipe  | Inhalation of smoke by combustion process in joint, pre-roll or pipe  | Inhalation of smoke cooled and purified by water contained in the bong   | Dab rig (glass pipe) in which high percentage cannabis concentrate is vaporized  |
| <b>Pro</b>          | <ul style="list-style-type: none"> <li>- High dosage control</li> <li>- Fast onset of action</li> <li>- Easy and most common way of consumption</li> <li>- High acceptance by consumers</li> </ul> | <ul style="list-style-type: none"> <li>- Simple and traditional way of extraction and shelf life</li> <li>- Can be produced without large investment</li> <li>- High acceptance by consumers</li> </ul> | <ul style="list-style-type: none"> <li>- Less pollutants than joint, as smoke is filtered and cooled by water (Cozzi, 1995)</li> <li>- No tobacco consumption</li> </ul>                                     | <ul style="list-style-type: none"> <li>- No combustion process</li> <li>- Concentrate has a long shelf life and small volume</li> <li>- Little odor</li> </ul>   |
| <b>Contra</b>       | <ul style="list-style-type: none"> <li>- Lung damage due to pollutants associated with the combustion process (especially when combined with tobacco)</li> </ul>                                   | <ul style="list-style-type: none"> <li>- Traditionally consumed through the process of combustion thus resulting in lung damage</li> <li>- Most of the monoterpenes are lost</li> </ul>                 | <ul style="list-style-type: none"> <li>- High dosage, little dosage control</li> <li>- Loss of some active ingredients in water (Cozzi, 1995)</li> <li>- May cause lung damage (Thu et al., 2013)</li> </ul> | <ul style="list-style-type: none"> <li>- Very high doses and very little dosage control</li> <li>- Can lead to significant overdoses and side effects</li> <li>- High risk of addiction and withdrawal symptoms (Loflin &amp; Earleywine, 2014)</li> </ul> |

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### Health damage and THC concentration of products & applications

(Note: The figure was specially created and is only for approximate orientation)



#### Sources

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