

# cannabinoids and appetite

## what are ‘the munchies’?

The feeling of increased appetite following cannabis intoxication has been documented for hundreds of years.<sup>1</sup> Popular culture has termed the sensation ‘the munchies’. Unfortunately the phenomenon has been so widely accepted on anecdotal evidence alone that it has only recently been subject to scientific research.

The first human study confirming the anecdotal reports was conducted in 1971 by Hollister and colleagues.<sup>2</sup> This research identified that sweet foods were more palatable to those who were administered oral cannabis and paved the way for further study.

A more detailed study followed in 1976, conducted by Greenberg and colleagues.<sup>3</sup> This research surveyed the energy intake and weight changes of participants under observation for one month. Participants who smoked supplied cannabis showed an increased body weight which decreased promptly after cannabis was no longer supplied. Energy intake also increased over the first few days and then decreased to an average slightly higher than levels recorded prior to cannabis administration.

Following on from this study, Foltin and colleagues conducted even more systematic research in 1986.<sup>4</sup> Foltin also kept participants under observation for approximately one month but placed participants in one of three activities; in private work, conducting a performance task, or in a social situation. Participants tended to increase their daily energy intake, most notably in periods of social activity while snacking on foods, in addition to the meals normally provided. Continuing his research, Foltin later analysed participant snack choices and found sweet solid snacks such as cookies, candy bars and cakes were preferable over savory solid snacks or sweet drinks.<sup>5</sup> This finding has been confirmed by several other studies over the last decade.<sup>6</sup>

Despite the associations between cannabis use and appetite there has been little study to determine if cannabis users tend to weigh more or less than non-users. Unfortunately, the research that has been conducted shows inconsistent results. Between studies both a positive<sup>7-9</sup> and negative association<sup>10-13</sup> has been found, as well as no association.<sup>14</sup> The inconsistencies in results may highlight inconsistencies in the methods of study such as different definitions of current/recent cannabis use and obesity, and a lack of control for confounding factors such as other illicit drug use, mental health and diet.

## is there potential for cannabis to be used for weight control?

As cannabis can potentially moderate appetite and metabolism, the potential therapeutic properties were highlighted in the research. These therapeutic uses however, mostly predate any specific knowledge of cannabinoids and the mechanisms at play. As such, with further research, it is likely that the therapeutic benefits of cannabinoids for weight control can be even better understood and controlled.

## how does using cannabis increase appetite?

The animal research technology available today has made it possible to gain a better understanding of how cannabis alters appetite by studying the actual chemical pathways involved within our body. It was not until the last decade that the mechanisms involved were even identified.

Like opiates, cannabinoids exert their effect by interacting with specific receptors, located within different parts of our brains and peripheral nerves. Today it is known that we have receptors within us that respond to ingested cannabis as well as cannabinoid-like substances that exist inside us, 'endogenous cannabinoids'. The particular receptor linked to cannabis use and appetite regulation is termed CB<sub>1</sub>.<sup>6,15,16</sup> To date, the CB<sub>1</sub> receptor has been found to be active in several areas of the body known to stimulate eating behavior. These are as follows:

- the gastrointestinal system – moderating energy intake<sup>16</sup>
- the sections of the hypothalamus and hind brain that regulate food intake<sup>17,18</sup>
- the reward centre of the brain – helping food make us feel better<sup>19</sup>
- from within stomach and intestinal tissue – helping us know when we are hungry<sup>20-22</sup>
- the limbic forebrain – helping food seem more palatable<sup>23,24</sup>

Other hormones, such as leptin and insulin, are also known to regulate food intake and have been found to share functional relationships with cannabinoids and possibly even be responsible for their synthesis.<sup>15, 25-27</sup>

Interestingly, endogenous cannabinoids have recently been discovered in foods such as chocolate and human and bovine milk.<sup>28,29</sup> Notably, the neonatal survival of many species is largely dependent on their suckling behaviour, or appetite for breast milk. Research responding to this curious link has since identified the endogenous cannabinoid system to be the first neural system to display complete control over milk ingestion and neonatal survival.<sup>30</sup> Thus, it may be that cannabinoid receptors in our body interact with the cannabinoids in milk to stimulate a suckling response in newborns so as to prevent growth failure.

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