

The impact of cannabis on lipid metabolism – benefit or harm?

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Introduction

Cannabis (*Cannabis sativa*) is the most widely used illicit drug in the world (1). Excessive use is associated with many adverse health effects (2). Cannabis increases appetite and leads to weight gain (3). Due to the effects of cannabinoids on adipose tissue, it is important to study the relationship between cannabis and socially significant diseases such as diabetes and obesity (4).

Aim

The aim of the review is to monitor the effects of cannabinoids contained in cannabis (*Cannabis sativa*) and to investigate their impact on lipid metabolism.

Methods

The methods are not mentioned because the article is a review article.

Results

The endocannabinoid system has a role in the regulation of a lot of processes and is involved in various pathophysiological conditions (5). CB₁ receptor signaling is associated with stimulation of lipoprotein lipase activity, meaning that CB₁ modulators contribute to fat accumulation (6).

Cannabidiol (CBD) exhibits antiadipogenic effects by blocking CB₁ receptors (7). On the other hand Δ⁹-tetrahydrocannabinol (THC) activates CB₁ receptors located in the limbic part and the hypothalamus, thus increasing appetite and showing orexigenic effects (8) (Fig. 1).

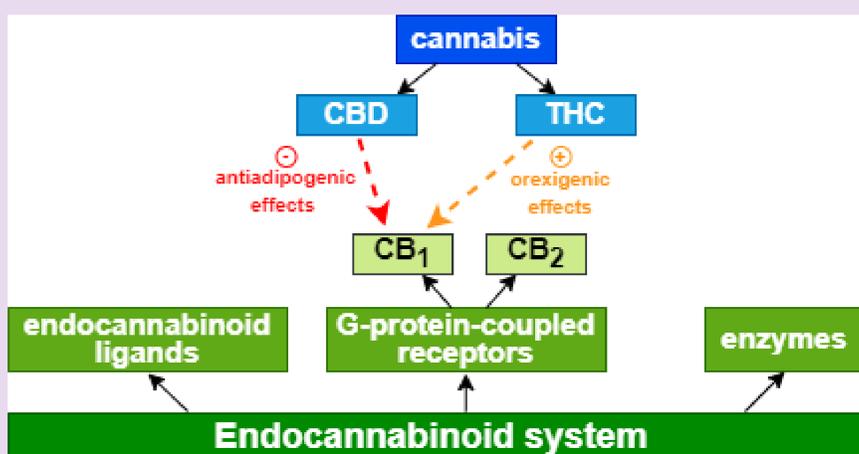


Fig. 1 The impact of cannabis on endocannabinoid system

Cannabis use increases levels of the 'hunger hormone' ghrelin, which plays a major role in appetite and food intake (9). A study found a significant increase in ghrelin, with the route of cannabis administration being particularly important (10). Also a research observed reduced levels of leptin. It is one of the key hormones in lipid metabolism and exhibits ghrelin-opposite effects (11).

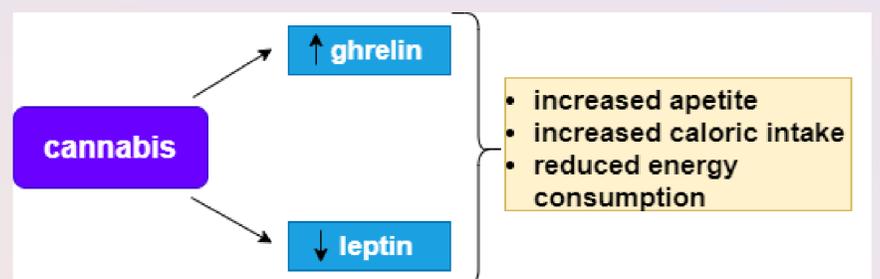


Fig. 2 The impact of cannabis on ghrelin and leptin level

Cannabis also increases levels of low-density lipoprotein (LDL) and total cholesterol without altering high-density lipoprotein (HDL) levels (12). A longer study on smokers found elevated plasma levels of apolipoprotein C-III, a marker of hypertriglyceridemia and coronary heart disease (5) (Fig. 3).

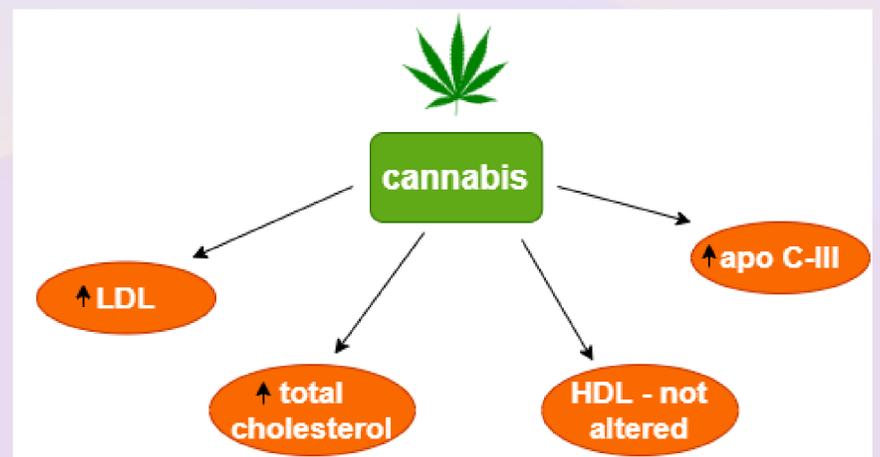


Fig. 3 The impact of cannabis on lipoproteins

Conclusions

A number of factors influence the research - socio-economic status, the ratio of cannabinoids in the studied cannabis, the method of measurement and use, alcohol intake and others. Most studies show that cannabis directs lipid metabolism in the anabolic direction. Its use leads to increased caloric intake, increased appetite, decreased leptin levels and a higher atherogenic risk.

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