



Endocannabinoids and the control of energy balance.

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Abstract

Two receptors have been cloned to date for the psychotropic compound Delta(9)-tetrahydrocannabinol, and termed cannabinoid CB(1) and CB(2) receptors. Their endogenous ligands, the endocannabinoids, have also been identified. CB(1) receptors and endocannabinoids are present in brain structures controlling energy intake and in peripheral cells (hepatocytes, adipocytes, pancreatic islet cells) regulating energy homeostasis. CB(2) receptors are more abundant in lymphocytes and macrophages, and participate in immune and inflammatory reactions. Metabolic hormones and peptides regulate the levels of the endocannabinoids and, hence, the activity of cannabinoid receptors in several tissues in a seemingly coordinated way. The endocannabinoids, particularly after stress and brief food deprivation, act in turn as local modulators of the expression and action of neurotransmitters, hormones and adipokines involved in metabolic control. Endocannabinoid overactivity seems to accompany metabolic and eating disorders and to contribute to the development of abdominal obesity, dyslipidemia and hyperglycemia. Accordingly, clinical trials have shown that CB(1) receptor antagonists are efficacious at reducing not only food intake, but also abdominal adiposity and its metabolic sequelae.

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