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## Links between central CB1-receptor availability and peripheral endocannabinoids in patients with first episode psychosis

Dickens AM, Borgan F, Laurikainen H, Lamichhane S, Marques T, et al.

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Links between central CB1-receptor availability and peripheral endocannabinoids in patients with first episode psychosis

#### Abstract

There is an established, link between psychosis and metabolic abnormalities, such as altered glucose metabolism and dyslipidemia, which often precede the initiation of antipsychotic treatment. It is known that obesity-associated metabolic disorders are promoted by activation of specific cannabinoid targets (endocannabinoid system (ECS)). Our recent data suggest that there is a change in the circulating lipidome at the onset of first episode psychosis (FEP). With the aim of characterizing the involvement of the central and peripheral ECSs, and their mutual associations; here, we performed a combined neuroimaging and metabolomic study in patients with FEP and healthy controls (HC). Regional brain cannabinoid receptor type 1 (CB1R) availability was quantified in two, independent samples of patients with FEP (n = 20 and n = 8) and HC (n = 20 and n = 10), by applying three-dimensional positron emission tomography, using two radiotracers, [C-11]MePPEP and [F-18]FMPEP-d2. Ten endogenous cannabinoids or related metabolites were quantified in serum, drawn from these individuals during the same imaging session. Circulating levels of arachidonic acid and oleoylethanolamide (OEA) were reduced in FEP individuals, but not in those who were predominantly medication free. In HC, there was an inverse association between levels of circulating arachidonoyl glycerol, anandamide, OEA, and palmitoyl ethanolamide, and CB1R availability in the posterior cingulate cortex. This phenomenon was, however, not observed in FEP patients. Our data thus provide evidence of cross-talk and

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