TOXICOKINETICS AND TOXICODYNAMICS OF THE CANNABINOID RECEPTOR AGONISTS ADB-FUBINACA AND AMB-FUBINACA

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Aims

This work intended to critically review the toxicodynamics and toxicokinetics of ADB and AMB.

Toxicodynamics

- ADB has an affinity of 1.2 nM for the CB1 receptor, an EC50 of 8.92 nM, a Ki of 0.36 nM, and its action is 140 times more potent than THC.
- AMB has an affinity for the CB1 receptor of 2.0 nM, an EC50 of 9.84 nM, a Ki of 10.04 nM, and its action is 85 times more potent than THC. When smoked, it takes effect after 10-15 sec., lasting up to 60 min.

Adverse effects

Neurological Effects
- Altered perception
- Agitation
- Anxiety
- Paranoia
- Hallucinations
- Loss of consciousness
- Loss of memory
- Convulsions

Cardiovascular Effects
- Thoracalgia
- Hypertension
- Tachycardia

Kidney Effects
- Acute renal failure

Toxicokinetics

- ADB is rapidly absorbed orally and metabolised by oxidation of the N-(1-amino-alkyl-1-oxobutane) portion. Although 27 metabolites are excreted in the urine, the main consumption biomarkers are the hydroxy-alkyl (I), hydroxyindazole (II) and the metabolites hydroxydehydroalkyl (III)

AMB is rapidly and extensively hydrolysed, not being detected in routine drug tests. However, 15 de-esterified metabolites are detected and quantified in urine, the main consumption markers resulting from the hydroxylation of the vanilloid side chain (I), followed by the respective glucuronide (II)

Highlights

- ADB and AMB were among the most apprehended SCs in the EU in 2019;
- They are rapidly and extensively metabolised, with various potentially bioactive metabolites being excreted in the urine;
- CB1 and CB2 agonists’ higher potency compared to THC, may account for their exacerbated toxicity relatively to the phytocannabinoid.