

P.191 The novel psychoactive phenethylamine 4-fluoroamphetamine produces a mild psychedelic state without affecting creative thinking

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The phenethylamine 4-fluoroamphetamine (4-FA) is a so-called novel psychoactive substance with a chemical structure that resembles that of amphetamine and MDMA [1]. Since 4-FA users report the subjective experience to range between that induced by amphetamine and MDMA, and it is known both substances can produce an altered state of consciousness, it will be tested whether 4-FA induces a similar state. In addition, dissociative states have been linked with increased creativity or creative thinking [2]. In light of the renewed interest in psychedelics as therapeutic tools in the treatment of psychopathologies like depression and anxiety disorders, where rigid thinking is one of the hallmarks, it is important to test whether this new compound can induce flexible thinking.

A placebo-controlled 2-way crossover study in twelve healthy poly-drug users was conducted to test subjective and behavioral effects of 4-FA (100 mg). The 100 mg dose was based on a user survey amongst Dutch 4-FA users. The majority of the users who knew which dose they ingest typically indicated it to be between 50-150 mg [1].

Subjective effects were tested by means of the Bowdle Visual Analogue Scale, the Clinician Administered Dissociative States Scale, the Altered States of Consciousness Rating Scale and the Hallucinogenic Rating Scale. Convergent and divergent thinking was assessed by means of the Picture Concept test (PCT). Both subjective and objective measures have previously been shown to be sensitive to the effects of stimulants and/or psychedelic substances [3,4]. Measurements took place 1-to-11 hours post-administration. 4-FA concentrations were determined in serum up to 12 hours after administration.

Findings showed that 4-FA induced a psychedelic state which was highest 1 hour after 4-FA administration, around 4-FA peak serum concentrations. The 4-FA-induced psychedelic state decreased over time. There was no effect of 4-FA on creative thinking.

While the hypothesis that 4-FA would induce a psychedelic state that can be categorized in between that produced by amphetamine and MDMA was confirmed, the hypothesized effect on divergent thinking could not be confirmed. Although not statistically significant, it was interesting to see that convergent thinking was increased 6 hours after intake compared to placebo, while divergent thinking performance was placebo-like. This pattern is opposite to the previously demonstrated ayahuasca effect where two hours after intake convergent thinking was decreased by 15% compared to baseline and divergent thinking was increased by approximately 20% [4].

To confirm the absence or presence of 4-FA effects on creative thinking, future research needs to include creative performance tests at different time points in the serum curve. In addition, creative thinking should then also be assessed in proximity with the peak of dissociative effects to test whether both are associated as suggested by previous studies linking dissociative states and creativity [3].

It is concluded that while the 4-FA-induced psychedelic state is mild in intensity and in between that of amphetamine and MDMA as hypothesized, more research is needed to (in) validate whether 4-FA can change creative thinking.

References

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P.193 Curcumin attenuates methamphetamine-induced conditioned place preference via an inhibition of CC chemokine ligand 2 expression

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Background: Curcumin (Curc) is a natural flavonoid component and have been reported the anti-oxidant, anti-inflammatory and anti-nociceptive effects [1]. Many clinical trials have focused on Curc as therapeutic agent in various chronic diseases, including diabetes and cancers, as well as cardiovascular, neurological and psychological diseases. Methamphetamine (Meth) is an addictive psychostimulant widely abused around the world [2]. Meth exposure is known to promote microglial activation and production of inflammatory mediators, such as cytokines and chemokines [3]. Recent findings indicate that chemokine ligands play an important role in the neuroinflammation in the central nervous system (CNS). However, little is known about the relation between Meth-induced reward and inflammatory mediators. Among several chemokine ligands, CC-chemokine ligand 2 (CCL2) is derived from neurons and glial cells, and has been paid attention to the CNS effects because of its facilitative