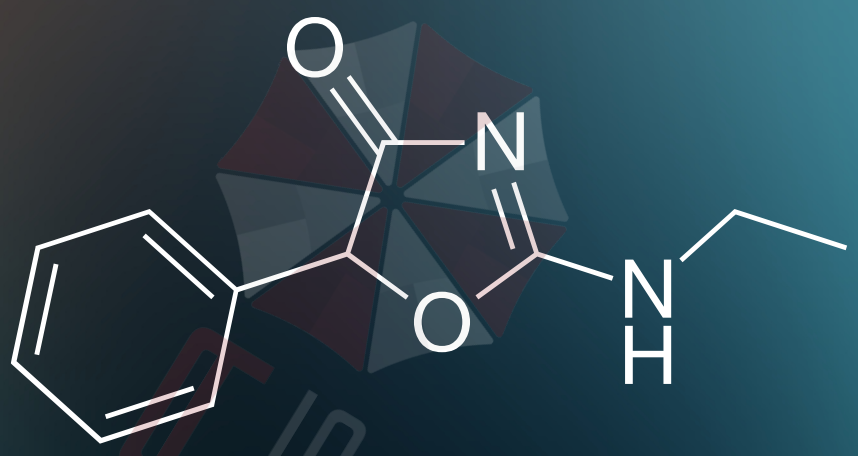

Neurofunctional Effects of Fenozolone: A Norepinephrine-Dopamine Releasing Agent

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History

Fenozolone was developed in the middle of the 1960 by Laboratoires Dausse in France. It is structurally related to other pemoline-like stimulants such as cyclazodone, 4- methylaminorex and Fluminorex.

Mechanism of Action

The mechanism of action of pemoline like stimulants is not completely understood. They inhibit in vitro in a competitive manner, noradrenaline uptake and dopamine and this leads to and inhibitions of serotonin uptake. The compound is categorized norepinephrine-dopamine releasing agent (NDRA).

Analysis

One publication describes the identification of fenozolone from human urine by GC/MS for anti-doping purposes.[1]

Clinical Trials

The effects on cerebral motor activity of a single dose of fluoxetine (20 mg), an inhibitor of serotonin reuptake, and fenozolone (20 mg/50 kg) were assessed by functional magnetic resonance imaging in human patients. Subjects performed sensorimotor tasks with the right hand. Functional magnetic resonance imaging studies were performed in two sessions on two different days. The first session, with two scan experiments separated by 5 hours without any chemical administration, served as time-effect control. A second, similar session but with chemical administration after the first scan assessed chemical effects.

A large increase in evoked signal intensity occurred in the ipsilateral cerebellum, and a parallel, large reduction occurred in primary and secondary motor cortices. Both chemicals elicited comparable effects, that is, a more focused activation in the contralateral sensorimotor area, a greater involvement of posterior supplementary motor area, and a widespread decrease of bilateral cerebellar activation . The authors demonstrated for the first time that cerebral motor activity can be modulated by a single dose of fluoxetine or fenozolone in healthy subjects. Chemical effects demonstrated a direct or indirect involvement of monoamines and serotonin in the

facilitation of cerebral motor activity.[2]

Conclusion

There is very little data on fenozolone. It can be assumed it has a similar spectrum of effects compared to cyclazodone and pemoline. There are however no studies that compare these compounds to each other.

References

[1] GielsdorfW. Determination of the psychostimulants pemoline, fenozolone and thozalinone in human urine by gas chromatography/mass spectrometry and thin layer chromatography. *J Clin Chem Clin Biochem.* **1982**;20:65-68. doi:10.1515/cclm.1982.20.2.65.

[2] Loubinoux I, BoulanouarK, Ranjeva JP, Carel C, Berry I, Rascol O, Celsis P, Chollet F. Cerebral functional magnetic resonance imaging activation modulated by a single dose of the monoamine neurotransmission enhancers fluoxetine and fenozolone during hand sensorimotor tasks. *J Cereb Blood Flow Metab.* **1999**;19:1365-1375. doi: 10.1097/00004647-199912000-00010.

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