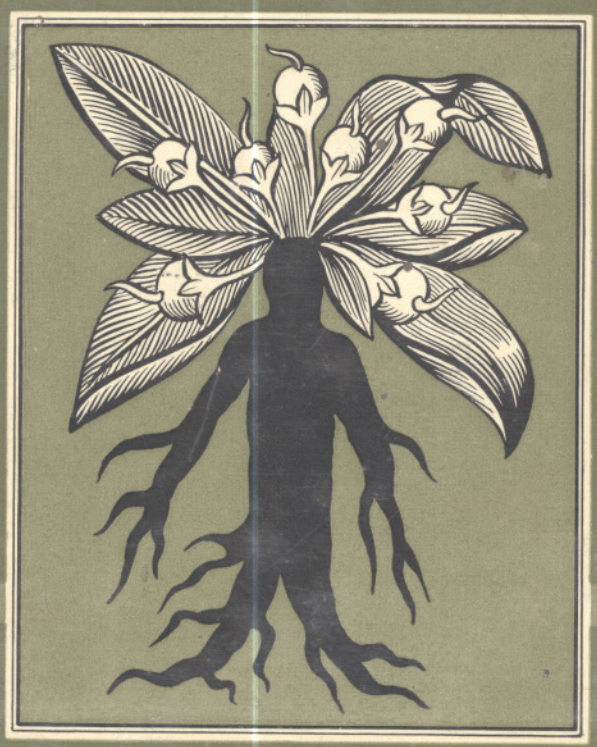
Psychotropic Drugs

Edited by

S. GARATTINI AND V. GHETTI



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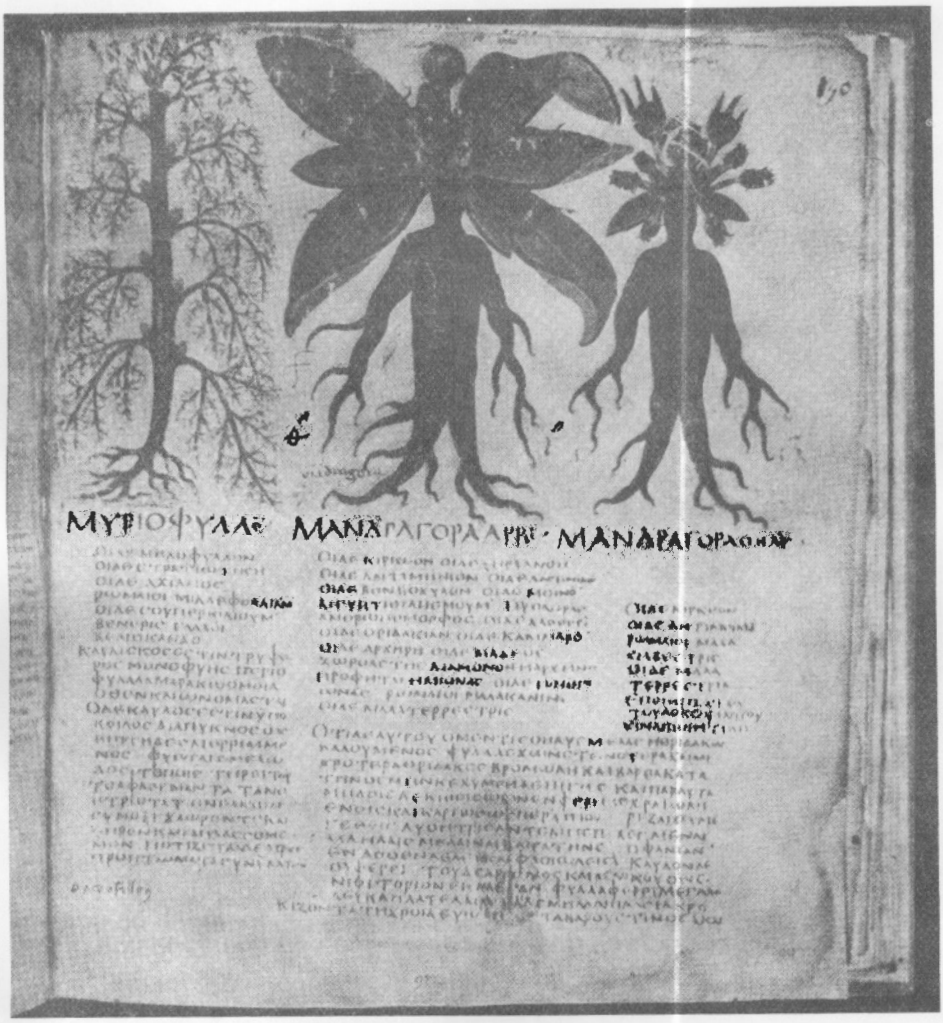

agissent de la même manière: il y a superposition d'inhibition, on ne peut qu'être effrayé de ce qui subsiste en fait de métabolisme cérébral. La consommation en hydrates de carbone est uniformément réduite, mais il y a, à nouveau, consommation cérébrale en phosphates inorganiques et la fuite cérébrale en potassium est arrêtée.

La méthylandrostanolone agit différemment: elle laisse subsister une consommation cérébrale en glucose, la production en lactate est importante, ainsi que la production en CO_2, la consommation cérébrale en phosphates inorganiques atteint des chiffres normaux, mais la fuite cérébrale en sodium et en potassium demeure élevée.

Cette étude permet d'entrevoir des voies thérapeutiques différentes pour le traitement de syndromes hallucinatoires ou d'excitation du S.N.C. allant jusqu à l'inhibition. Certains composés s'opposent à l'action de la LSD-25 en lui superposant leur action inhibitrice juste sur le métabolisme cérébral (5501 DE, viadril) d'autres sans effets caractéristiques sur le métabolisme normal du cerveau, tout en s'opposant à l'action de la LSD-25, laissent subsister un métabolisme cérébral sub-normal (méthylandrostanolone).

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* The compounds 5501DE, 114B and 115B were synthetised by J. BAISSE AND C. DOUZON from Delalande research laboratories.

The effects of mono- and diethylamide of lysergic acid on the activity of serum phosphatase in schizophrenics

Although the differences between the actions of LSD-25 and LAE-32 are well documented on the psychopathological level, the same can not be said on the physiopathological level. Numerous effects seem to be closely analogous; EEG aspects are similar, the action on the behaviour of the *Betta splendens* or "Siamese fighting fish" is practically the same, etc. A certain antagonistic action on the psychological level is contrasted with a very similar action at the vegetative level: pallor, mydriasis, torpidity of the photomotor reflexes, tachycardia, as we were able to witness elsewhere.

Within the scope of our investigation on schizophrenic psychoses, we tried to study further any possible difference between the action of these two derivatives of lysergic acid, working on material that was as well selected and standardized as possible. We selected 9 hebephrenics, of practically the same age (23–25 years), with a non-acute initial phase: patients whose illness was of three or four years duration, well "fixed" in their psychosis, without marked deterioration, and above all without oscillations, pousées, or any evident variation of their present state.

On the basis of the occasional observation that in schizophrenics treated with LSD-25 the serum phosphatase activity, both alkaline and acid, decreased, we thought it very useful to investigate the effect of LAE-32 on these enzymic activities, in material that was as uniform as possible.

The patients chosen for the experiment had not been treated with any medicaments for many days. A sample of blood was taken from each patient at the same hour during the morning and

TABLE I

	Alkaline phosphatase activity		*Acid phosphatase activity*	
	Before	*After*	*Before*	*After*
1) D.A. (LSD)	1.14	0.84	0.84	0.66
2) C.R. (LSD)	2.50	1.78	0.72	0.34
3) P.A. (LSD)	2.42	1.30	0.30	0.24
4) S.F. (LSD)	3.96	3.48	0.90	0.32
5) C.R. (LAE)	2.05	1.10	0.65	0.32
6) A.E. (LAE)	4.80	3.84	0.60	0.30
7) C.A. (LAE)	2.16	1.68	0.72	0.34
8) S.U. (LAE)	1.44	0.54	0.36	0.46
9) M.D. (LAE)	2.34	1.89	0.72	0.34

while the patient was still fasting. Immediately afterwards an endovenous injection of 0.5 mg of LAE-32 or 100 γ of LSD-25 was given. After exactly two hours another sample of blood was taken from each patient.

The serum phosphatase activity, alkaline and acid, of each serum was then determined, using BODANSKI's method, modified by FISKE AND SUBBAROW.

The results obtained are reported in Table I.

As can be seen, the phosphatase activity, both alkaline and acid, also decreases under the influence of LAE-32; there are no marked differences from the results obtained with LSD-25. The alkaline phosphatase activity after LSD decreased, in our cases, 26%; after LAE it decreased 29%. The acid phosphatase activity after LSD decreased 43%, and after LAE 50%.

The material studied is exiguous, both in itself and also because of the rigorous criteria used in selecting the patients. Hence we can only give an indicative value to the results obtained.

This biochemical study, even in its restricted limits, did not show any significant difference in action of these two derivatives of lysergic acid. What interested us most of all was, any eventual difference in behaviour of the two substances with regard to a biochemical factor that previous observations with LSD have shown to be subject to variations.

The interpretation of these variations is at present extremely hypothetical: linking up the enzymic activity of phosphatase with some phases of the intermediate metabolism of carbohydrates one could perceive some relationship, which, however, is not yet confirmed. According to the hypothesis of Mayer-Gross, LSD blocks carbohydrate metabolism by acting on hexosomonophosphate.

We hope to be able soon to specify experimentally the action of these two substances on the phosphatases of the central nervous system, in a series of studies that we are going to undertake to elucidate the variation in phosphatase activity of the brain under the influence of neuropsychotropic drugs.

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