

1968-Wagner-Aghajanian-Bing-Correlation of performance test scores with tissue concentration of lysergic acid diethylamide

Wagner, J. G., G. K. Aghajanian, and O. H. L. Bing. 1968. Correlation of performance test scores with tissue concentration of lysergic acid diethylamide. *Clinical Pharmacology and Therapeutics*. 9(5): 635-638.

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This paper offers a two compartment model of lysergic acid diethylamide (LSD) in volunteer students and through parameter estimation models the amount of LSD in the tissue after its initial administration through the plasma. Then there is a strong negative correlation between concentration of LSD in the tissue and test performance on simple arithmetic.

Previously published plasma concentrations of LSD-25, observed following intravenous injection of 2 mcg. per kilogram of LSD-25, have been found to be explained by the two-compartment open model. Performance scores on arithmetic tests were shown to be highly linearly correlated with the concentration in the "tissue" (outer) compartment. The estimated volume of the plasma (inner) compartment was 16.3 per cent of body weight, which is approximately the value reported for extracellular water; the estimated volume of the tissue compartment was 11.5 per cent of body weight. The estimated half-life for loss of LSD-25 from the plasma compartment, based on the model, was 103 minutes compared with a half-life of 180 minutes calculated directly from plasma concentrations.