

Effects of tryptophan loading on human cognition, mood, and sleep

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Abstract

Modulating central serotonergic function by acute tryptophan depletion (ATD) has provided the fundamental insights into which cognitive functions are influenced by serotonin. It may be expected that serotonergic stimulation by tryptophan (Trp) loading could evoke beneficial behavioural changes that mirror those of ATD. The current review examines the evidence for such effects, notably those on cognition, mood and sleep. Reports vary considerably across different cognitive domains, study designs, and populations. It is hypothesised that the effects of Trp loading on performance may be dependent on the initial state of the serotonergic system of the subject. Memory improvements following Trp loading have generally been shown in clinical and sub-clinical populations where initial serotonergic disturbances are known. Similarly, Trp loading appears to be most effective for improving mood in vulnerable subjects, and improves sleep in adults with some sleep disturbances. Research has consistently shown Trp loading impairs psychomotor and reaction time performance, however, this is likely to be attributed to its mild sedative effects.

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