The effects of high and low dose Tryptophan Depletion on mood, cognition and cardiovascular function

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Cognitive dysfunctions are frequently observed in major depressive disorder, including impairments on memory, attention and executive functioning. Likewise, heart rate variability has been shown to be reduced in depressive patients. It is not clear, however whether these changes are primary or secondary to low mood. Acute tryptophan depletion (ATD) has been shown to induce transient depressive mood in a subsample of patients in remission from depression, whereas cognitive changes were found in the whole sample (Booij et al., 2003). The present study investigated the effects of high-dose and low-dose ATD on working- and autobiographical memory; and its relation with mood and heart rate variability.
Twenty-two SSRI-responders in remission from depression received ATD in a double-blind, crossover design. Two dosages of the ATD mixture were used on separate days (25 g vs. 100 g), reducing plasma Trp levels by 50% and 90% respectively. Mood was assessed prior to and 6.5 h after ATD; a cognitive test battery was conducted at both sessions 5 h after ATD, and prior to and after the ATD sessions. Heart rate variability was assessed continuously throughout the afternoon of each session and during a baseline session using ambulatory monitoring system (AMS) device.
The tryptophan-deficient mixtures induced the expected reductions in plasma tryptophan levels. Full but not partial ATD induced depressive symptoms in a subsample of patients. Speed of information processing during the easier trials of a memory scanning task improved in a dose dependent manner, irrespective of ATD-induced depressive response. The effects of ATD on the processing and retrieval of emotional material and heart rate variability will also be presented.

Booij L. et al. (2003) 7th Dutch Endo-Neuro Meeting, Doorwerth, The Netherlands, 2-5 June.

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