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Fluorophores in the urine of patients with neuropsychiatric disorders

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The prevalence of psychiatric disorders in population permanently increases and their occurrence shifts to earlier years. A hypothesis has been formulated that many mental diseases, rise from a disturbance of the brain serotoninergic system. The only known serotonin precursor is tryptophan. Tryptophan is metabolized mainly through the methoxyindole and kynurenine pathways. Also guanosine triphosphate metabolites (neopterin, biopterin, pterin) are associated with tryptophan metabolism. The goal of this work was to determine the levels of neopterin, biopterin, pterin and tryptophan in the urine of children with depressive disorder and compare them to the levels in urine of healthy volunteers. These metabolites were determined by high performance liquid chromatography (HPLC) with fluorescence detection 350/450 nm (excitation/emission wavelength) and 280/370 nm for tryptophan. We found decreased tryptophan in the urine of depressed patients compared to healthy volunteers. Biopterin also showed similar tendencies. Biopterin metabolism enters the conversion of tryptophan to serotonin. Decreased levels of tryptophan may be due to a faster degradation in kynurenic way.

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Keywords: neuropsychiatric disorders; urine; high performance liquid chromatography

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