

TRYPTOPHAN METABOLISM AND ITS DISORDERS

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Introduction. Tryptophan is essential proteinogenic amino acid. The biological role of tryptophan in the human body includes the protein synthesis and, also, it is necessary for the synthesis of important biologically active compounds – serotonin, melatonin and nicotinic acid. This means that tryptophan metabolism disorders or its deficiency leads to the defective proteins synthesis and the lack of vitamin PP, serotonin or melatonin.

Aim. The aim of this report is to discuss the possible ways of tryptophan metabolism, the role of this amino acid as a precursor for biologically active compounds and tryptophan metabolism disorders.

Materials and methods. To achieve the aim, we studied the available information resources in Internet using the key words “tryptophan metabolism” and “tryptophan metabolism disorders”.

Results and discussion. The diet tryptophan is mainly used for the body proteins biosynthesis. The other of the metabolism is carried out in three directions, which are complex and, in some areas, intersect with each other. In principle, the following pathways can be distinguished: kynurenine – oxidation and destruction of the indole ring with the formation of derivatives of kynurenic and anthranilic acids, which under physiological conditions involves 95% of tryptophan. In one of the branches of this pathway, one of 60 tryptophan molecules is converted to nicotinic acid, most of the tryptophan is degraded to acetyl-S-CoA. Serotonin pathway – oxidation to 5-hydroxytryptophan and further conversion to serotonin and melatonin. Normally, near 1% of tryptophan is oxidized along the serotonin pathway, but it is of great importance and this pathway disorders could be highly harmful. The indole pathway is the formation of indole derivatives, which are then conjugated and excreted in the urine.

Kynurenine pathway intermediaries are implicated in diverse disease processes such as inflammation and immune disorders, endocrine conditions, cancers and neuropsychiatric diseases.

Also, was discovered the hereditary disorder of tryptophan transport – Hartnup disease, which leads to skin rash, cerebellar ataxia and mental.

Conclusions. Thus, the knowledge and the results of experimental studies showed that tryptophan metabolites have the potential to serve as disease markers and

new medications based on metabolic pathways modulation can bring lasting cures for patients suffering from these intractable conditions.

ANTIDEPRESSANTS: MECHANISM OF ACTION, TOXICITY AND POSSIBLE AMELIORATION

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Introduction. Depression is a global health problem, with more than 264 million people affected; it is the leading cause of disability in the world with a delay in diagnosis and treatment. Untreated depression is a serious health problem, it increases risky behaviors, such as drug addiction, suicide, ruined relationships, problems at work.

Aim To study the different types of antidepressants their classifications, side effects, field of uses and prescriptions in management of depression, investigate pathogenesis and latest approaches to rational treatment.

Materials and methods. We searched Google, Google Scholar and PubMed for relevant scientific articles on the topic and examined national guidelines of Ukraine, Britain, Europe and USA.

Results and discussion. Optimal treatment starts with appropriate patient education about the nature of the illness and the nature of the proposed treatment. Specific pharmacological treatment is effective for major depression with greatest evidence but less effectiveness for moderate to mild forms of depression.

In moderate depression, the decision to prescribe an antidepressant or not it is up to the doctor to determine the necessity of a pharmacological treatment in consideration of the possible side effects and the evolution of the symptoms.

The choice of an antidepressant drug is based on the type of symptomatology as well as severity of the symptoms, avoidance of side effects (sedation, weight gain, sexual dysfunction), presence of comorbid psychiatric and/or somatic disorders, prior positive and/or negative response (and tolerability/adverse effects) to a given antidepressant. Other considerations are the contraindications and potential toxicity of the drug and, to a lesser degree, its cost. Moreover, patient preference — after being informed about the benefit-risk ratio — may be expected to enhance compliance.