

**EFFECT OF AMINO ACIDS ADMINISTRATION
IN EXCESS DOSES ON THE BIOLOGICAL
FUNCTIONS OF EXPERIMENTAL
ANIMALS**

By

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ABSTRACT

Yasmin Sayed Hussein Hassan: Effect of Amino Acids Administration in Excess Doses on the Biological Functions of Experimental Animals. Unpublished M.Sc. Thesis, Department of Agricultural Biochemistry, Faculty of Agriculture, University of Ain Shams, 2016.

L-amino acids, DL-amino acids or DL-branched chain amino acids (BCAA) mixtures were administered for experimental rats via intramuscular injection (I) or oral feeding (O) using stomach tube to determine the adverse effects of these treatments. Rats received different amino acid mixtures daily for 30 days at a dosage of 100 mg/kg body weight. The adverse effects of these treatments were monitored through different blood biochemical assays, blood pressure measurements and histological examinations for skeletal muscles. No significant ($p \leq 0.05$) differences were noticed among the levels of blood urea, alanine aminotransferase (ALT), total protein (TP) or albumin for rats treated with various amino acid mixtures during the experiment period compared to the control. Conversely, high values of creatinine exhibited for rats treated with DL-BCAA (O), DL-amino acids (O) and DL-BCAA (I) compared to other treatments and the control. Increasing of serum creatinine without urea for previous treatments may be due to the early stage of kidney damage or increasing of muscle mass. All treatments except rats treated with L-amino acids (O) recorded high levels of uric acid. Activity of serum aspartate aminotransferase (AST) showed significant ($p \leq 0.05$) increases in all treatments, especially for the rats treated with DL-BCAA (O & I) compared to the control. Increasing of AST activity without ALT for all treatments indicate that the injury may be occurred in the heart muscle or skeletal muscles but not in liver cells. A good agreement among lactate dehydrogenase (LDH), creatine kinase (CK) and an isozyme CK-MB were obtained showing that the

administration of different amino acid mixtures except L-amino acids (O) were able to induce heart injury. Significant ($p \leq 0.05$) increases of systolic and diastolic blood pressure were observed for rats treated with different amino acid mixtures except L-amino acids (O & I). Histological examinations of thigh muscle showed inflammatory cells infiltrating muscle fiber and increase amounts of connective tissues in between and above muscle fiber for rats treated with DL- and L-amino acids by injection route. Obviously, administration of amino acid mixtures in the investigated forms via oral or injection routes caused various adverse effects especially for heart muscle.

Keywords: Biological functions, Blood pressure, DL-amino acids, DL-branched chain amino acids (BCAA), Experimental animals, Intramuscular injection, L-amino acids, Overdose and Skeletal muscles.

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