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The effect of plant extract on the hematological and biochemical parameters of the blood in piglets after weaning

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Introduction

The use of plants and plant extracts to replace synthetic chemicals in traditional animal husbandry, and increased consumer demand for environmentally friendly products stimulate the development of phytopreparations and study of their effects on animals bodies. The use of environmentally friendly raw materials of plant origin, as phytoextracts in the production of food additives and preparations, allow to easily and quickly eliminate the deficiency of essential nutrients, activate the body to adverse environmental factors, thereby reducing morbidity and improve animal welfare.

Material & Methods

The experiment was conducted on a private farm using piglets of a Large White breed. All animals in age of 14 days were divided into 2 groups: control and experimental, each containing 8-10 piglets with a live weight of 5 kg. After weaning, at 35 days of age, the piglets were left in the cages of sows. Feeding up was carried out by a standard diet with free access to feed and water, using a premix from Sano. From the age of 14 days and before weaning, 40% of *Urtica dioica L.* nettle extract was added to the standard diet of piglets of the experimental group in the amount of 6 mg/kg of body weight (feeding period - 22 days). The piglets of the control group were fed a standard diet. Piglets blood was taken before morning feeding from the anterior vena cava at the age of 14, 36 (1 day after weaning), and 42 days (7 days after weaning). Hematological parameters (number of erythrocytes and leukocytes in the Goriayev chamber) were determined in the blood and hemoglobin concentration was studied by a hemoglobin-cyanide method. The total protein and glucose concentration in the blood plasma, activities of creatine kinase (CK), alanine aminotransferase (ALT), aspartate aminotransferase (AST) and alkaline phosphatase (ALP) were evaluated using the kits Simko LTD (Ukraine).

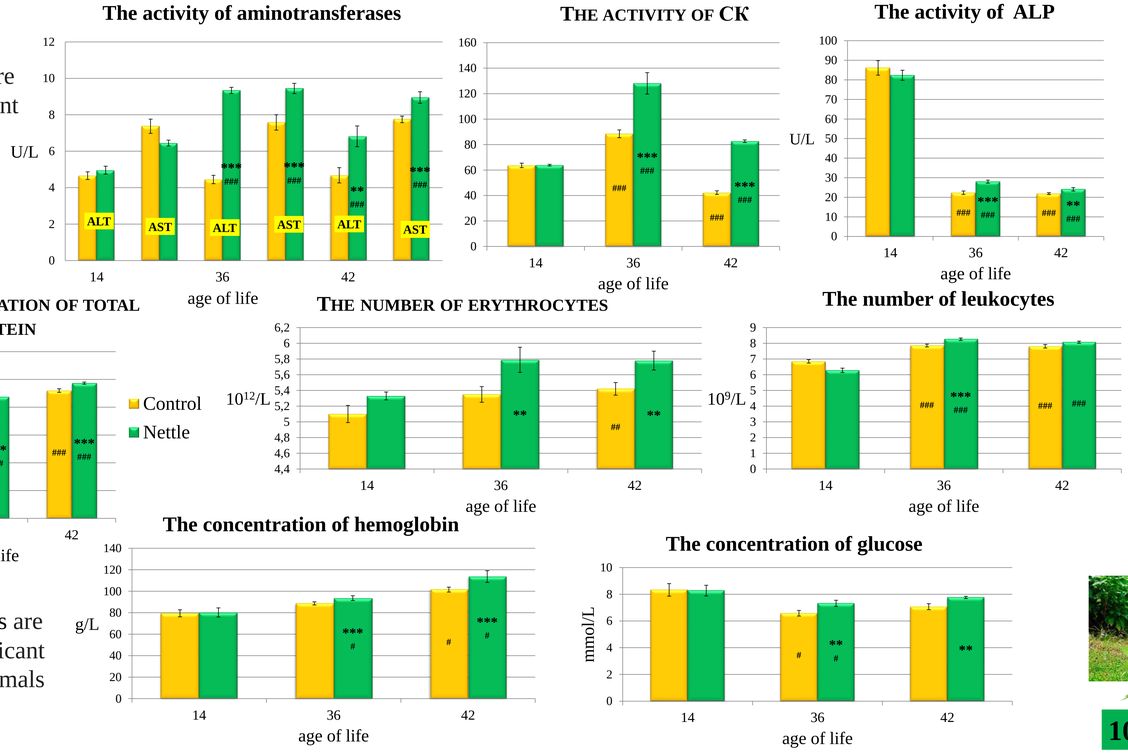
Results

It has been shown that a powerful complex of natural biologically active substances in the nettle extract causes activation of erythropoiesis and respiratory blood function (increase in erythrocytes amount). We also observed an antianemic effect (increased hemoglobin concentration), increase phosphorylation and energy (activation of CK, ALP) and protein metabolism (increase in total protein, AST, and ALT activity), immune stimulation (increase in the number of leukocytes), activation of hydrocarbon metabolism (increase in glucose concentration) in the body of piglets after weaning. The studied extract contributed to the activation of anabolic processes and improved digestibility of dietary nutrients, which caused an increase of 10% of live weight and average daily gain and 12% safety of piglets in the experimental group relative to control animals.

Biochemical and Hematological parameters of blood of piglets

* – the differences are statistically significant between control and experimental pigs (P<0.05-0.001)

– the differences are statistically significant for 14-day-old animals (P<0.05-0.001)



Conclusions

We believe that it is possible to propose to add nettle extract to the standard diet of young animals to increase the stress resistance and adaptability of their body in critical periods of ontogenesis.