

# POSSIBILITIES OF USING OREGANO (*ORIGANUM VULGARE L.*) AS A DIETARY SUPPLEMENT IN BROILER CHICKEN AND HENS PRODUCTION

Veselin Ivanov<sup>1\*</sup>, Nadya Bozakova<sup>2</sup>

<sup>1</sup>Department of Neurology, Psychiatry and MDS, Faculty of Medicine, Trakia University, Armeyska street 11, 6000 Stara Zagora, Bulgaria

<sup>2</sup>Department of General Animal Breeding, Animal Hygiene, Ethology and Animal Protection Section, Faculty of Veterinary Medicine, Trakia University, Student`s campus, 6000 Stara Zagora, Bulgaria

\*e-mail: veskoasenov@abv.bg

## Abstract

Intensive broiler chicken and laying hen farming, in many cases, includes keeping the animals in stressful conditions, which can deteriorate their well-being and productivity. There are new dietary strategies, based on the use of herbal extracts, which are especially developed to improve productivity, lower stress levels, including oxidative stress values and thus the quality of meat production. Oregano (*Origanum vulgare L.*) is known to have bioactive ingredients with antimicrobial, antifungal, insecticidal and antioxidant properties, which make it a valuable anti-stress dietary supplement for sensitive, highly-productive broiler chickens and laying hens. The aim of this publication is to draw particular attention to the possibility to use oregano and its derivative products as a dietary supplement in the industrial production of broiler chickens and laying hens.

In order to achieve that, we analyzed scientific articles on PubMed and ResearchGate, presenting research information on the active ingredients available in oregano and its derivative products and their possible diverse integration as a dietary supplement in broiler chicken and hen production. Oregano definitely has a marked positive effect on local intestinal oxidative stress alleviation, stimulates the production of natural antibodies and positively modulates chicken and hens' intestinal microbiota. It has been found that oregano essential oil increases the content of secretory immunoglobulin A and the relative expression of Claudin 1, Mucin 2, and Avain beta-defensin 1 in the ileum. Oregano oil positively affects the reproduction of *Firmicutes* phylum, and *Clostridium* and *Lactobacillus* genera, while decreasing the reproduction of *Romboutsia* in the intestines. What is more, oregano reveals to have beneficial antioxidant properties - it decreases mRNA levels of heat shock protein 70 and increases mRNA levels of catalase in the kidneys and in the liver. It also increases mRNA levels of superoxide dismutase; glutathione peroxidase and total antioxidative capacity in plasma, while at the same time decreases the plasma concentration of malondialdehyde, which is associated with improved oxidative protection in poultry.

Our analysis also included formally published documents and scientific publications related to the chemical content and the effects of oregano and its derivative products.

**Key words:** *Oregano, Broilers and hens, Intestinal antioxidative capacity, Immunity and intestinal microbiota.*