# SYNERGY OR COMBINED EFFECT? A CRITICAL ANALYSIS OF PHYTOGENIC COMBINATIONS USED IN BROILER CHICKEN DIETS UNDER HEAT STRESS

**D.-C. Negură*, M. G. Usturoi**

*"Ion Ionescu de la Brad" Iasi University of Life Sciences, Romania*
**e-mail: delia.negura@iuls.ro*

***Abstract***

*The use of phytogenic additives represents a promising nutritional strategy for mitigating the effects of high-temperature exposure in broiler chickens, given their antioxidant, anti-inflammatory, and immunomodulatory effects, as well as their role in supporting intestinal homeostasis. Combined phytogenic strategies are of particular interest, based on the premise that their complementary mechanisms may produce greater effects than when administered individually. However, demonstrating the beneficial effect of a mixture does not, in itself, prove synergism, raising an important interpretive question: when can the effect of a mixture be considered truly synergistic? This paper critically analyses the evidence regarding the use of such combinations, examining the relationship between the composition of the mixtures, their effects on productive performance and physiological responses, as well as distinguishing between combined effects and potentially synergistic ones. The evidence from the available literature is more consistent regarding the efficacy of the combinations, while the synergistic nature of the combinations remains limited, thus necessitating factorial experiments, direct comparisons between the mixture and its components, and an analysis of interactions to demonstrate synergism, as well as its relevance to the physiological adaptability and production performance of broiler chickens subjected to heat stress.*

***Key words:*** *phytogenic additives, poultry, bioactive compounds, complementary effects*