Press release

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SEARUP®, BASED ON MACROALGAE EXTRACTS (MSP® IMMUNITY) ACTIVATES BROILER'S IMMUNE CELLS (HETEROPHILS AND MONOCYTES), IMPROVING THEIR RESISTANCE TO CHALLENGES.

In the continuity of the Olmix Group- Brest University – Brest Medical school partnership, the *in vivo* effects of *Searup*® on poultry immune response have been examined. The results have been published in the Journal of Veterinary Science & Research.

A single administration of *Searup*® at 1 ml/l of drinking water, the dose recommended for the use in the farm, activates two innate immune avian cell types, heterophils and monocytes, via the activation of the TLR2 and TLR4 receptors.

Heterophils and monocytes play a crucial role in defending animals against invasive pathogens via both direct action (innate immune response) and by inducing the appropriate acquired immune responses. Monocytes can differentiate into dendritic cells and macrophages, and thus play an important role in the development of innate and adaptive immune response by phagocytic and antigen-presenting activities respectively. The heterophils are the avian neutrophils, when they are activated, they can produce immune mediators as well as antiviral enzymes.

Activation of Heterophils has been demonstrated by the increased glucuronidase release and oxidative burst *(contributing to the protection in case of microbial challenge)* while monocytes activation has been proven by evaluating nitric oxide release *(having important antimicrobial properties)*.

Additionally, different cytokines involved in innate and adaptive immunity were transiently upregulated in response to *Searup*® , such as interferon-α, interferon-γ, IL1 β and OAS (Oligoadenylate synthase) for heterophils and interferon-γ, IL1 β and OAS for monocytes. These cytokines participate in several activities of the immune response as IL1 β acts on the proliferation and the differentiation of immune cells, interferon-γ activates macrophages and antibodies production by B cells while interferon-α and OAS protect against virus. This is in adequation with previous similar study with MSP® IMMUNITY (a macroalgae extract rich in sulfated polysaccharides), a key ingredient of *Searup*® where the expression of the above cytokines was also upregulated (Guriec et al, 2018).

Moreover, *Searup*® triggered an upregulation of the gene expression of immune mediators which are involved in both cellular immune responses against intracellular and extracellular pathogens. This suggests that *Searup*® might support the adaptive immune response and modulate the pathogens response.

Searup® can be used to activate animals' immune responses to improve their natural defenses and resistance in case of immune challenge. As for example it can be applied during the starting period, around vaccinations or at the first signs of immunodepression *Searup*® helps to reduce the use of antibiotics.

Link to the article

REFERENCES:

- Guriec et *al.*, 2018, Ulvan Activates Chicken Heterophils and Monocytes Through Toll-Like Receptor 2 and Toll-Like Receptor 4. Frontiers and immunology. DOI: 10.3389/fimmu.2018.02725

- Guriec et *al.*, 2021, Activation of Heterophils and Monocytes in Chicken with a Formulation Containing a Seaweed Extract from Ulva armoricana.

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Thanks to algae!