

Pain in poultry production – a real threat to productivity

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It is not only infectious or environmental diseases that constitute a problem in poultry breeding, but also pain and its negative consequences affecting birds' productivity.

Such effects may be various: starting from the loss of appetite, through increased FCR up to higher mortality.

All of them affect the production result directly, and all of them may be effectively treated with innovative herbal products such as Salivet.

What is pain?

According to the International Association for the Study of Pain (IASP) pain is defined as a subjective, unpleasant feeling and emotional impression occurring during the activity of a stimulus which damages tissues or directly affects its potential threat to the body.

A direct reason for the development of visceral pain is inflammation caused by bacteria, viruses, parasites or fungi. It is very difficult to indicate the first signs of pain.

However, this occurs when the intensity of the stimulus exceeds physiological values for a given body.

At the same time, this threshold may be significantly decreased in the case of mechanical injuries, decrease of birds' condition, excessive bird density, increased tem-

perature, improper concentration of harmful gases or faulty feeding to mention only a few reasons causing stress.

This can lead to the activation of a cascade of pathological processes changing hormone management of the body.

Cortisol, which is then produced, causes immunosuppression and therefore makes it difficult for the body to cope with the pain.

Diagnosing inflammation

The best indicator is the birds' behaviour including:

- Decreased water consumption.
- Decreased feed consumption.
- Weight gain suppression.
- Noisy or unnatural behaviour.
- Increased mortality.
- Changed appearance.
- Frequent squatting and swelling of joints (in the case of inflammation of extremities).
- Presence of any secretions and effusions around the natural body orifices.
- Falling behind the flock.
- Slumping posture, closing eyes.

Pathophysiology

The course of inflammation has four phases:

● Vascular phase.

Local hyperaemia takes place as a result of the activity of amines and kinins which cause capillary muscularis relaxation.

● Effusion and swelling phase.

In this phase the effusion fluid flows outside the vessels. The fluid accumulates in intercellular areas. The process is stimulated by inflammation mediators, which include mainly: prostaglandins, histamine, leukotriens, kinins and many others.

● Infiltration and proliferation phase.

Neutrophils, macrophages and local phagocytes flow to the focal. Such flow is induced by bacterial metabolites, fragments of decomposed tissues, granulocytes and macrophages. The activity of the latter causes the enhancement of non-specific body immunity, mainly by liver stimulation of acute-phase protein synthesis.

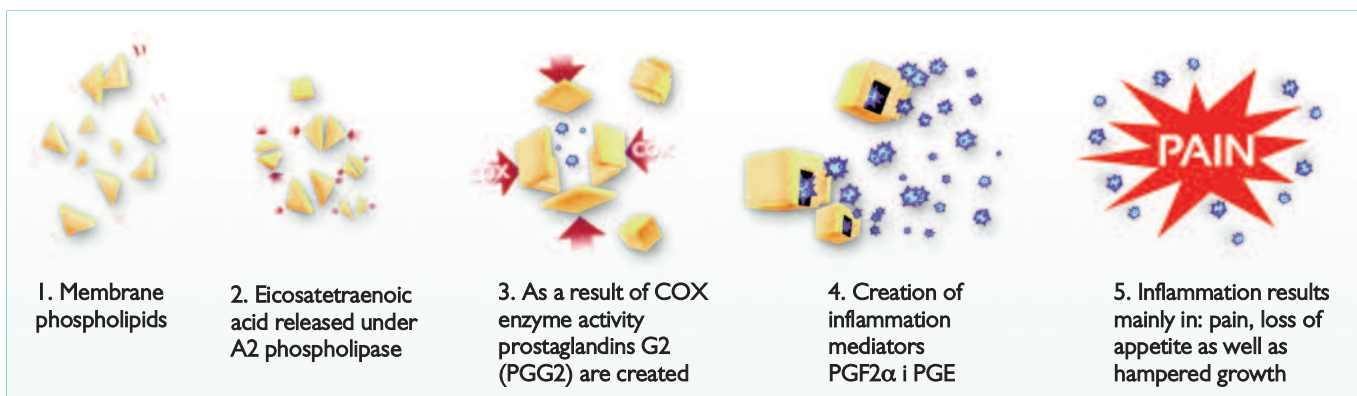
● Damage repair phase.

In the case of mild inflammation, the repair of damaged tissues and recovery usually take place. If the inflammation is large and causes severe change of body tissues, the tissues regenerate through cicatrisation or encapsulation.

Prostaglandins (PGE₂, PGF₂, PGD₂) are very important inflammation mediators. They are one of the main inducers of inflammation exacerbation. Prostaglandins are produced in all body cells. They are defined as local tissue hormones as their effect is limited to tissues and organs, in which their synthesis took place only. They are produced in transition cycle from eicosatetraenoic acid. This acid is a part of

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Fig. 1. Mechanism of creation of prostaglandins causing inflammation.



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membrane phospholipids, from which the acid is released under A2 phospholipase. Then the two oxide particles are chained with the eicosatetraenoic acid, which results in peroxide of prostaglandin G (PGG2). The described reaction is catalysed by cyclooxygenase. In the next stage prostaglandin H (PGH) is produced, which is then transformed into prostaglandins D, E and F.

Effects of prostaglandins

Locally produced prostaglandins cause:

- Vessel enlargement (PGE2) and creation of swelling at the inflammation focus. As a

result of these processes, bradykinin and histamine irritate nerve terminals, which lead to pain intensification.

- They can also contract the muscular membrane of blood vessels (PGF2).
- Inhibit the effects of anti-diuretic hormone in the kidneys.

Natural salicylates

Salicylates inhibit the activity of cyclooxygenase, the enzyme which catalyses the transition of eicosatetraenoic acid into prostaglandin peroxide (PGG2).

PGG2 is at the same time the initial substrate of biologically active forms of prostaglandins. This suggests that salicylates effectively prevent the production of harmful prostaglandins.

It is also assumed that salicylates mobilise the body to the synthesis of other active bodies – lipoxines which are antagonists of prostaglandins and inhibit the development of inflammation. Salicylates may also be administered to poultry in the form of water additives.

One of the preparations containing salicylates is Salivet, a supplement produced by BioPoint. The main ingredients of Salivet include:

- Phenol glycosides (approximately 10%) where the main active substance is salicin. The anti-inflammatory, analgesic and antipyretic effects of willow are conditioned with the presence of salicylic derivatives, mostly salicin and salicortin, tremulacin and others.

Upon oral administration they are hydrolysed by intestinal bacteria of the upper gastrointestinal tract to salicylic alcohol, which upon its absorption oxidises to salicylic acid. Publications of research also indicate their analgesic and blood diluting effects.

- Spireozide and isosalicin (also derivatives of salicylic acid). This material shows astringent and anti-inflammatory effects.

A unique product

This preparation is produced fully from natural materials, has no side effects, does not accumulate in the body, and therefore it does not need any withdrawal time.

Furthermore, it can be administered for a longer period of time, since it does not have a negative impact on the activity of gastric mucosa but, on the contrary, it enhances its activity.

One should also mention the 'all in' technology according to which Salivet has been produced. It is an innovative technology patented by BioPoint ensuring:

- Precise and constant amount of active substances for each product lot.
- High product activity throughout its shelf life.
- Constant product activity along the whole watering line.
- Decreased vulnerability to external factors.
- Elimination of non-active substances.

In poultry production the focus has always been on effective treatment of infectious agents and their elimination from the environment.

To ensure maximum production it is also essential to both speed up recovery and reduce the negative effects of pain on the birds, and it is this area of therapy that Salivet is designed to fill. ■