

Salicylic acid, acetylsalicylic acid (aspirin) and sodium salicylate belong to the best-known non-steroidal anti-inflammatory drugs. Plant extracts containing salicylates have been used since ancient times as a means for fighting fever and pain. Until today aspirin is one of the most common drugs sold over the counter. In veterinary medicine, particularly in the treatment of farm animals, the use of salicylates on larger scale began only in the 70's of the twentieth century.

Salicylates, like all drugs are dangerous for man in case of exceeding the recommended dose. Irritation of the stomach and duodenum, thus causing the ulcers is among the most common side effects of their use. In addition, at a certain percentage of population hypersensitivity to salicylates is recognized, which can manifest by headache, agitation, excessive sweating, impaired balance after consumption of salicylate, even in small amounts.

Hypersensitivity to salicylates is a serious problem because it is connected not only with the administration of drugs, but also with the consumption of certain foods. Salicylates, and above all, salicylic acid are naturally found in vegetables, fruits, herbs and spices, tea, nuts, juices, wine and beer. It is assumed that products of animal origin (meat, poultry, fish, eggs, milk and dairy products) do not contain salicylates or contain only trace quantities of them. However, the administration of drugs to animals and the commonly occurring natural salicylic acid may be associated with their presence in tissues and the products of animal origin which may pose a potential risk to consumers.

Salicylates may be subject to metabolic transformation in the body, the so-called biotransformation. The metabolism of salicylates has been thoroughly described in humans and in some animals. Studies conducted over the salicylic acid metabolism pathways confirm the difficulty in the prognosis of medication doses, justifying the need for research resulting from interspecies differences. Due to the fact that some of the metabolites are not stable and are re-transformed to salicylic acid in the gastrointestinal tract, also those metabolites have to be determined for the evaluation of exposure to salicylates.

The main objective of the project is to define and compare the biotransformation of salicylic acid and acetylsalicylic acid given to hens in the water and salicylic acid as a compound of natural origin occurring materials and feed additives. It is planned to carry out experiments on laying hens divided into four experimental groups. The first group, so-called control group, will receive a feed containing low concentration of salicylic acid ($< 0.25\text{mg / kg}$). The second and the third groups will be given salicylates in drinking water – salicylic acid and acetylsalicylic acid, respectively, while the fourth one will receive the experimental feed prepared with the materials and feed additives with high content of salicylates ($> 0.25\text{ mg/kg}$). Eggs, plasma, muscle, liver and kidney of chickens will be tested for the residues of salicylic acid, acetylsalicylic acid and their metabolites using an analytical method developed within the project.

The research results will allow to compare the profile of biotransformation and the depletion of salicylic acid and acetylsalicylic acid in laying hens with the results obtained previously for turkeys when establishing the maximum residue limit. This will allow for a preliminary assessment of the applicability of salicylic acid in chickens, including laying hens and allow the verification whether the results obtained during tests on turkeys can be transferred to other species. In addition, the proposed experimental system will provide information on potential differences in the metabolism of salicylic acid depending on the form and dosage of its administration.