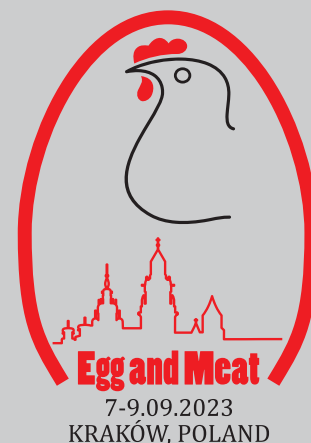


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P-36 Effects of different tannin-based extracts on gut chicken spontaneous contractility

Laura Mattioli¹, Ivan Corazza², Matteo Micucci³, Marco Pallavicini⁴, Roberta Budriesi¹, Mojca Osredkar Mergole⁵

¹Food Chemistry and Nutraceutical Lab, Department of Pharmacy and Biotechnology, Alma Mater Studiorum-University of Bologna, Bologna, Italy

²Department of Specialistic, Diagnostic and Experimental Medicine (DIMES), University of Bologna, S. Orsola-Malpighi University Hospital, Alma Mater Studiorum-University of Bologna, Bologna, Italy

³Department of Biomolecular Sciences, University of Urbino "Carlo Bo", Urbino, Italy

⁴Department of Pharmaceutical Sciences, University of Milano, Milano, Italy

⁵Silvateam S.p.A., San Michele di Mondovi (CN), San Michele di Mondovi, Italy

Background: Transmission of gastrointestinal disease is favoured by liquid excrements, because by stagnating in the litter, they can greatly facilitate the passage of bacteria and viruses through lesions of the legs, which often occur in meat and breeding chickens. Adequate smooth muscle contractility in the gastrointestinal tract is therefore essential to maintain the better consistency formation of stools as well as better digestion and absorption of nutrients. Silvaeed ENC and Silvaeed Q represents an important source of bioactive molecules, such as tannins. These phytocomplexes obtained from natural matrices have several health biological effects, of which the main ones are astringent, antispasmodic and spasmolytic properties. The aim of presented trial was to study the in vitro effects of a hydrolysable tannin-rich extract (Silvaeed ENC) and a condensed tannin-rich extract (Silvaeed Q) on the intestinal tracts and the gallbladder basal spontaneous contractility of healthy chickens. The results showed that the two phytocomplexes influenced the spontaneous intestinal contractility in different ways by regulating the tone and consequent progression of the food bolus. A reduction in the contractility of intestinal smooth muscle promotes absorption and causes an increase in fecal consistency. Thus, improving the quality of life and welfare of poultry are objectives that benefit the producer and public health.

Materials and Methods: Fresh gastrointestinal tracts of healthy chicks Ross 308 (2.65–2.85 Kg) were obtained from a local slaughterhouse. The tissues (duodenum, caecum, ileum, proximal colon and gallbladder) were rapidly set up under a suitable resting tension in 15 mL organ bath, containing appropriate physiological salt solution (PSS), consistently warmed (37°C) and buffered to pH 7.4 by saturation with 95% O₂-5% CO₂ gas. Tissues were allowed to equilibrate for at least 30 min. For the evaluated tissues the tracing graphs of spontaneous contractions were continuously recorded as tension changes in longitudinal muscle length. The following parameters were evaluated: mean contraction amplitude (MCA)(g); index of the spontaneous contraction variability (SCV); and basal spontaneous motor activity (BSMA). The spontaneous contraction rates were investigated through a standard FFT analysis. Three frequency bands were made (LF, MF and HF) for the evaluation of the absolute powers to simplify the analysis.

Results: The two phytocomplexes showed different effects towards gastrointestinal smooth muscle contractility. In the duodenum, Silvafeed ENC relaxed the muscles without significantly influencing the peristalsis waves, Silvafeed Q clearly reduced them. Both extracts reduced the tone in caecum, Silvafeed ENC reduced peristalsis frequencies blandly and in a concentration-dependent manner, while Silvafeed Q had an up-and-down pattern. In the ileum, Silvafeed ENC little affected spontaneous contraction and Silvafeed Q decreased it, but at the highest concentration. Silvafeed Q relaxed the colon and reduced the spontaneous variability at all frequencies of interest, Silvafeed ENC has no effects. Both Silvafeed ENC and Silvafeed Q increased spontaneous contractility of the gallbladder, but Silvafeed ENC in a concentration-dependent manner.

Conclusions: Results obtained in the presented study describing the different effects on different intestinal tracts confirm how a combined use of Silvafeed ENC and Silvafeed Q can improve spontaneous motility. The increase in contractility responsible for bolus mixing may favour the activity of pancreatic enzymes on proteins, lipids and carbohydrates, which would become more bioavailable for intestinal absorption. The reduction in the low-frequency of contraction in colon could be associated with a change in the transit velocity of the colon content, with a consequent increase in the absorption of electrolytes and an increase in the consistency of the stool. Silvafeed ENC and Silvafeed Q can beneficially support the life quality of the animal and, at the same time, the quality of the meat through action on different targets, including contractility.