A case report of the efficacy of SILVA FEED ENC®
tannin in a layer hen flock infected by *Salmonella virchow* and *Salmonella infantis*

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SILVA FEED ENC® (Silva Team – Italy) is obtained by water extraction of the chestnut wood (*Castanea sativa*). It’s mainly composed by hydrolysable tannins, lignin, cellulose, hemicellulose and mineral salts. Field observations suggested a role of SILVA FEED ENC® in control of enteric disorders in different poultry (broilers, turkeys, layer hens), cattle and swine productions. Recently a field trial was conducted to verify the efficacy of the administration of SILVA FEED ENC® in feed in a layer hen flock resulted infected by *Salmonella infantis* and *Salmonella virchow*. Feed was supplemented with 0.2% of SILVA FEED ENC®. After 20 days of treatment only *Salmonella infantis* was reisolated but in faeces only. The treatment was prolonged for 4 months. During and after this period the presence of *Salmonella infantis* and *Salmonella virchow* was tested with bacteriological examinations of carcasses, faeces and eggs. All tested samples resulted negative for *Salmonella* spp.

Keywords: tannins; layer hens; *Salmonella infantis*; *Salmonella virchow*

Introduction

Tannins are classified into two broad groups: the hydrolysable and the condensed or non-hydrolysable tannins. The hydrolysable tannins are usually compounds containing a central core of glucose or other polyhydric alcohols esterified with gallic acid (gallotannins) or hexahydroxydiphenic acid (ellagitannins). The consumption of tannins results in the precipitation of a protein/tannin complex which forms a thin layer of insoluble proteins on the surface of the digestive tract. This thin layer is said to protect the mucous membrane from “irritation” and reduce the absorption of toxic substances. Consequently less fluid is eliminated in the digestive tract, reducing the danger of dehydration. Hydrolysable tannins have antimicrobial properties because of an affinity for membrane proteins and therefore they may have an undefined effect on the flora of the digestive tract. In addition hydrolysable tannins have the potential to aid in the control of gastrointestinal parasites in sheep and goats. SILVA FEED ENC® (Silva Team – Italy) is obtained by water extraction of the chestnut wood (*Castanea sativa*). It’s mainly composed by hydrolysable tannins, lignin, cellulose, hemicellulose and mineral salts. Field observations suggested a role of SILVA FEED ENC® in control of enteric disorders in different poultry (broilers, turkeys, layer hens), cattle and swine productions. This field trial was undertaken to verify the efficacy of the administration of SILVA FEED ENC® in feed in a layer hen flock resulted infected by *Salmonella infantis* and *Salmonella virchow*.

Materials and methods

Case history
In total 25000 egg-table layer hens (Hy-line white) were used. All birds were raised in battery cages. During the monitoring program for the control of Salmonella spp. in layer hens the flock resulted infected by *Salmonella infantis* (isolated from faeces) and *Salmonella virchow* (isolated from eggs). To control these infections SILVA FEED ENC® was added to feed at a concentration of 0.2%. The treatment was prolonged for 4 months. During this period the faeces were removed periodically from the flock.

Bacteriological examinations

During and after the treatment period with SILVA FEED ENC® the presence of *Salmonella infantis* and *Salmonella virchow* was tested with bacteriological examinations of carcasses, faeces and eggs. Until the end of the productive cycle the following samples were taken every month: 5 carcasses, 30 eggs and 60 faeces. At necroscopy a pool of livers, spleens, ovaries and cecal tonsils was taken from the carcasses for bacteriological examination. For the isolation of Salmonella spp. the following isolation method was used: pre-enrichment in Buffered Peptone Water incubated at 37°C for 18 hours; enrichment in Rappaport-Vassiliadis medium with soya incubated at 41.5°C for 24 hours; plating on Hektoen Enteric Agar incubated at 37°C for 24 hours. The identification of Salmonella spp. was carried out using biochemical and serological (slide agglutination with specific antisera) tests.

Results and Discussion

After 20 days of treatment with SILVA FEED ENC® *Salmonella virchow* wasn’t isolated from carcasses, eggs and faeces. However, *Salmonella infantis* was isolated but in faeces only. All other samples taken until the end of the productive cycle resulted negative for *Salmonella* spp. As a result of new European regulations all member states of the European Union (EU) have to implement monitoring and control programs for Salmonella spp. in poultry. Recently *Salmonella hadar, Salmonella virchow* and *Salmonella infantis* were included in monitoring and control programs for breeder flocks. In layer hens control programs are based on biosecurity and vaccination. Available vaccines are directed against *Salmonella enteritidis, Salmonella gallinarum* and *Salmonella typhimurium* infection only. In addition the general fears of the development of antibiotic resistant bacteria led the EU regulations to a reduction of the use of antibiotics in animal therapy and prophylaxis. As a result producers are looking for natural additives to the control of pathogenic bacteria. SILVA FEED ENC® has an *in vitro* antimicrobial activity against bacterial strains involved in avian diseases included *Salmonella enteritidis, Salmonella typhimurium, Salmonella virchow* and *Salmonella gallinarum*. Moreover SILVA FEED ENC® can reduce the level of contamination of *Salmonella enteritidis* in animal feed. In conclusion SILVA FEED ENC® can be used to decrease faecal shedding of Salmonella spp. and, as the consequence, environmental contamination of *Salmonella* spp. in infected flocks. SILVA FEED ENC® can be an helpful method to control Salmonella infection combined with hygienic and other protection measures.

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References

