POSSIBILITIES OF PARATYPHOSIS PREVENTION IN BROILERS

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ABSTRACT

Under intensive growing systems, broilers, due to their genetic way of reproduction, are exposed to many stress factors. All these reflect on the productive parameters (average daily gain, weight at slaughtering) and represent a problem for farmers. This category also includes the risk factors caused by immunosuppression and by pathogenic germs` direct action (*Salmonella* spp., coliform bacteria), which are the veterinary doctor`s task.

Successive to the removal of antibiotics from animal food, between 1980 and 1990, most antibiotics used as growth promoters were also removed from E.U. market, and the last one was removed in January 2006. So there have been many attempts of proposing and then of applying substitutes, which should assure a bigger production and a protection with at least the same level like that one provided by antibiotics.

Organic acids have been used successfully in pig growth for 25 years and they still remain an alternative solution. Although they have been less used in poultry rearing, they are still very efficient if they are adapted to poultry physiology.

Another pretender at antibiotic replacement is represented by essential oils, and that is why many experiments have been performed in order to get to know essential oils` way of application. Mass media and scientific works use various names, like: plant extracts, phytogen additives etc., the following classification being proposed:

- essential oils – the ones obtained from plants belonging to the volatile category with a specific smell and/or other properties, and these plants are used especially in perfume, flavour and pharmaceutical industry;
- herbs – flowered plants whose stem above land does not become woody, plants appreciated for their medical properties, taste, smell;
- medicinal plants – from which the active substance present in roots, leaves or bark could be extracted.

The use of acidifiers or other such products starting with broilers` first day of life is a practiced in all aviculture. They are administrated in order to prevent the development of pathogenic germs, to increase digestibility and to favour intake. In the last years, acidifiers have been used in order to protect broilers` digestive tract from *Salmonella* invasion.

MATERIALS AND METHODS

We have taken under study 15,000 broilers, Ross 308, distributed into three groups of 5,000. All broilers were taken from a *Salmonella*-free incubation station and then housed and fed according to the requirements of this hybrid. The experimental group (E_1) received through forage Multiacid

P, 2 kg/tone; the experimental group (E_2) received Multiacid P, 3 kg/tone, and the control group M received 0.5% amoxicillin during the first seven days.

Then each group was divided into two (A and B), and each lot was administrated a *Salmonella* spp. culture, $10x10^9$ UFC/chicken.

Along the experiment, we have supervised mortality, specific intake, average weight, bacteria presence through cloacal swabs and, in the end we have performed the bacteriological control upon liver surface and the craw and caeca pH.

The product Multiacid P comprises the following acids: propionic, formic, lactic and plant extracts such as eugenol, carvacol, extracted from *Origanum vulgare*.

RESULTS AND DISCUSSION

Multiacid P components manage to reduce the pH within the broilers` digestive tract, impeding *Salmonella* engraftment and development. Table 1 presents craw and caeca pH in the case of all three broiler groups, and also *Salmonella* presence or absence in the liver.

Table 1. pH values of digestive tract content and presence of *Salmonella enteritidis* in liver

	pH of crop content		pH of ceca content		Positive to *S. enteritidis*		
	Day 12	Day 22	Day 12	Day 22	Day 1	Day 12	Day 22
E 1	4.8	4.3	4.6	4.3	+	–	–
E 2	4.6	4.4	4.4	4.3	+	–	–
M	5.8	5.7	5.6	5.3	+	–	–

Considering the productive parameters presented in Table 1, we may observe the pH reduction as a result of the administration of Multiacid P, compared to the control group. We may also notice that, after 12 days, no *Salmonella* could be observed.

According to the productive parameters presented in Table 2, we may notice that the product is a good eubiotic one, allowing a good-natural bacterial flora which accomplishes an unspecific local immunity, impeding the development of pathogenic germs.

Table 2. pH values of digestive tract content and presence of *Salmonella enteritidis* in liver

	pH of crop content		pH of ceca content		Positive to *S. enteritidis*		
	Day 12	Day 22	Day 12	Day 22	Day 1	Day 12	Day 22
E 1	4.8	4.3	4.6	4.3	+	–	–
E 2	4.6	4.4	4.4	4.3	+	–	–
M	5.8	5.7	5.6	5.3	+	–	–

The analysis of the values in Table 2 permits us to support the idea that the application of Multiacid P has led to a reduced mortality, a smaller specific intake and a bigger average weight.

CONCLUSIONS

1. Acidifiers assure an anti-*Salmonella* protection in broilers, during growth period.

2. The mixture between organic acids and plant extracts and essential oils increases the degree of anti-*Salmonella* protection in broilers.
3. The product Multiacid P allows a good combination and permits the anti-*Salmonella* protection, the reduction of specific intake and a bigger body weight.

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