Stress reduction and performance improvement in turkeys

Intensive turkey farming can be extremely challenging. As turkey fattening lasts significantly longer than for broilers and is associated with much higher management and feed costs, preventive health care plays an even more important role in avoiding premature losses during the fattening process.

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Oregano oil in turkeys

The most common health problems in turkey farming concern the respiratory system and the digestive tract of the birds. As the preventive or routine use of antibiotics is increasingly limited or banned, the primary goal is to avoid diseases through optimal housing management and preventive health care such as vaccination or vitamin supplementation.

Natural feed additives with health-promoting effects can be an alternative to non-necessary medicinal treatments. Oregano essential oil has proven antimicrobial, immunostimulant and antioxidant properties.

Responsible for the versatile mode of action are the 50+ different effective components in oregano oil.

For this reason, it is important to make sure to use an all-natural, but also highly standardised oregano oil like DOSTO Oregano, which was used in the trials shown below. With oregano oil, a consistent composition of the effective components and thus a uniformly high quality and mode of action can be guaranteed.

In the first 12 weeks of life, turkeys are particularly susceptible to various diseases. Therefore, it is important to support the animals and their immune system through optimal management and feed.

A trial with fattening turkeys in 2020 at the University of Warmia and Mazury in Poland showed that the administration of 37.5g oregano oil/ton of feed in the first 12 weeks of fattening significantly improved feed conversion over the entire period of 20 weeks (Fig. 1). The mortality of the animals could also be reduced by the addition of oregano compared to the control group (Fig. 2).

The addition of oregano oil led to improved profitability in a ratio of achieved yield to additional feed costs with an ROI of 12:1 (as of November 2022). Oregano oil successfully minimised the negative consequences caused by stress during the different production phases.

Protozoan infections in turkeys

Intestinal diseases caused by bacteria, viruses or protozoa can have an enormous impact on turkey health. Infections with protozoa are especially widespread.

Their habitat is very often the intestinal tract of the animals. Protozoa are capable of severely reducing immunity, making poultry more susceptible to secondary infections and, as a consequence, negatively affecting performance and profitability.

Histomonas meleagridis, Tetratrichomonas gallinarum and Cochlosoma anatis are a major problem for turkey production, as there are currently no approved medications available for prevention or treatment.

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Fig. 1. Oregano oil in turkey feed improves the FCR (day 0-140).

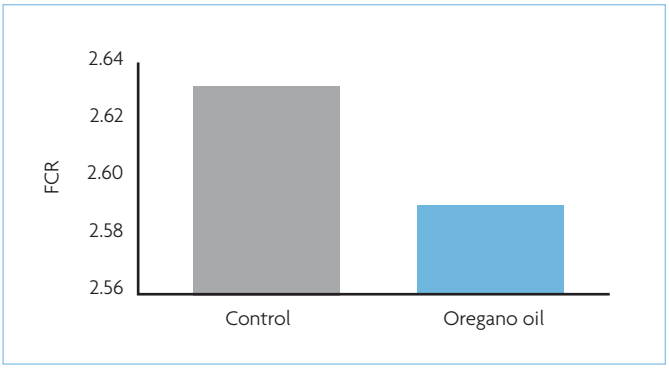
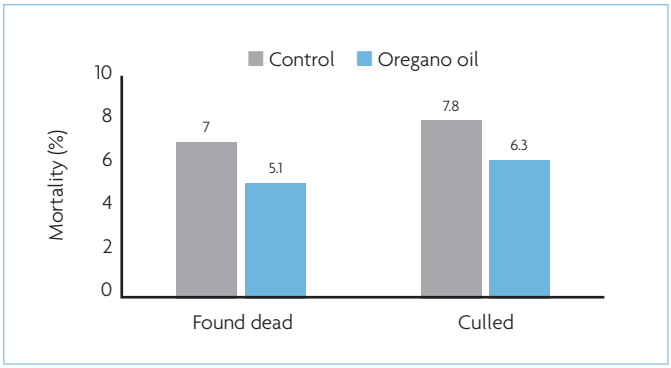


Fig. 2. Oregano oil in turkey feed reduces mortality.



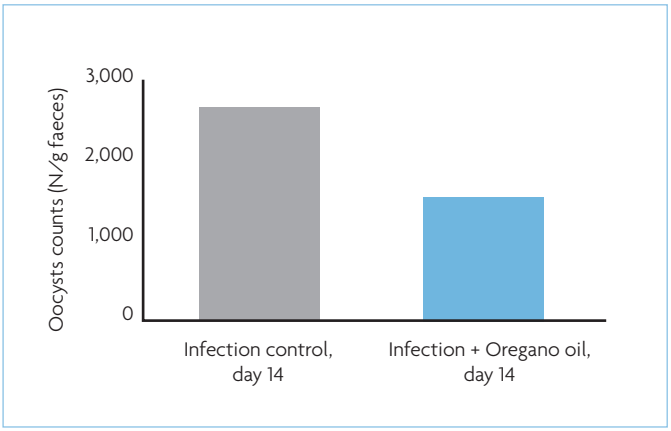


Fig. 3. Oregano oil in turkey feed reduces the Eimeria oocyst counts in faeces.

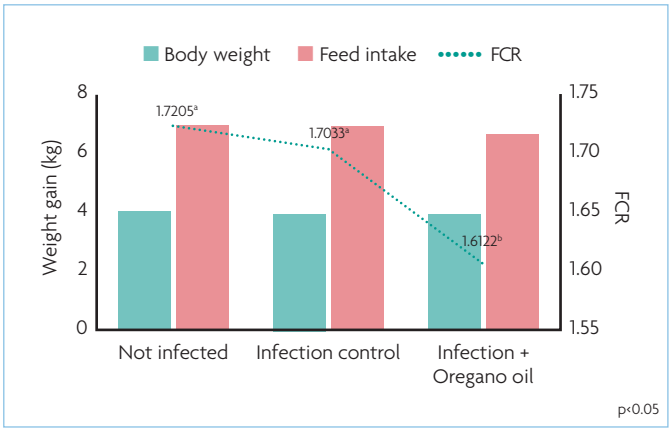


Fig. 4. Oregano oil in turkey feed improves performance in weeks 0-8 of the animals. (a, b differ significantly (p<0.05)).

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This treatment gap makes alternatives increasingly important in turkey farming.

Eimeria

Coccidiosis, one of the economically most significant diseases in livestock is caused by the protozoan species Eimeria spp.

While in many countries coccidiostats are utilised in poultry production, some countries prohibit or limit their use either by governmental regulations or due to production systems, that try to avoid the use of any antimicrobials. One possible approach is to vaccinate animals with eimeria live vaccines.

However, vaccinated animals are subject to performance depression, as with natural coccidiosis, caused by a high eimeria load.

Since the proliferation of eimeria in the intestinal epithelial cells impairs the absorption capacity of nutrients, a reduction in the number of eimeria may be beneficial for the animal. A direct effect of natural oregano essential oil against eimeria has been proven in several studies.

In a feeding trial at North Carolina State University (Raleigh USA), a group of non-vaccinated turkey poults treated with a coccidiostat, a group of live-vaccinated poults and a group of live-vaccinated birds that also received 25g oregano oil per ton of feed were compared on eimeria excretion and performance. At day 14 post

Fig. 5. Oregano oil in turkey feed improves weight development and feed conversion during infection with Cochlosoma (day 0-28).

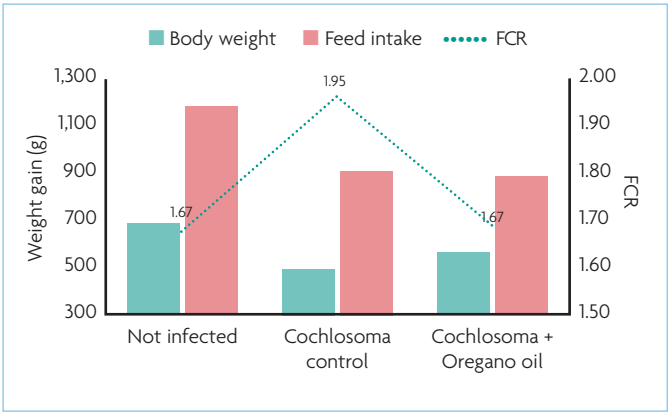
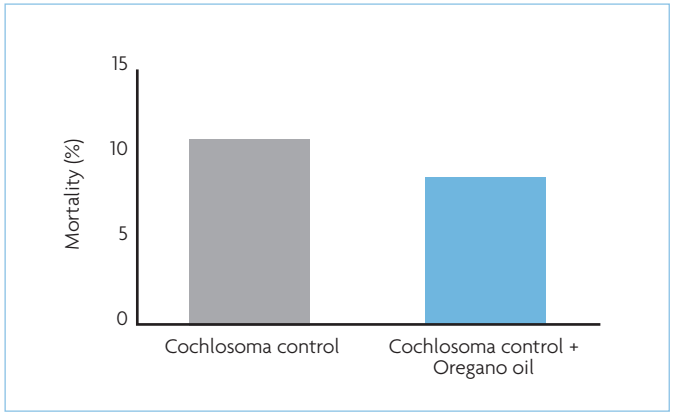


Fig. 6. Oregano oil in turkey feed reduces the mortality rate in case of infection with Cochlosoma.



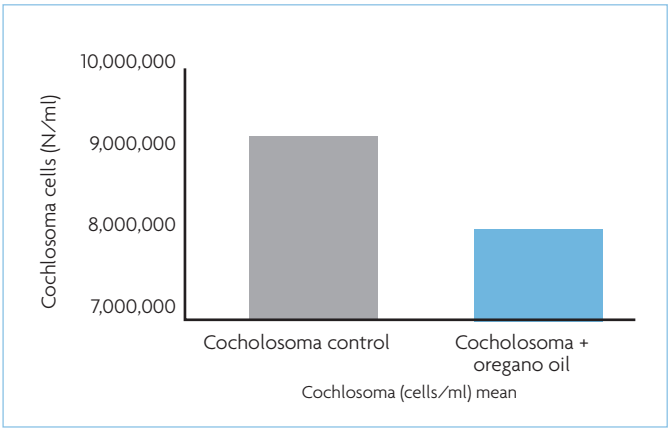


Fig. 7. Oregano oil in turkey feed reduces the number of Cochlosoma cells in the small intestine on day 28.

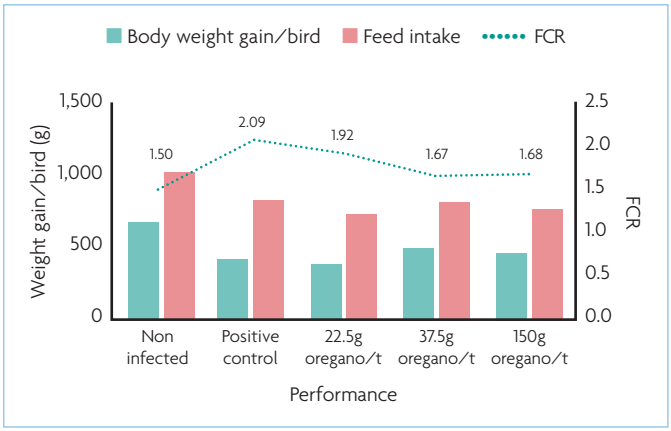


Fig. 8. Oregano oil in turkey feed improves feed conversion in the case of Histomonas infection.

vaccination, the number of Eimeria oocysts per gram of faeces in the infected animals receiving oregano oil was reduced by about 50% (Fig. 3) compared to the infection control group. In addition, the animals reached higher live weights and significantly improved feed conversion (Fig. 4).

Trichomonadida

Trichomonads include genera such as Tetratrichomonas and Chochlosoma spp. which manifest in the cloaca, colon and caeca of turkeys and cause severe intestinal inflammation.

Consequences include reduced feed conversion, severe weight loss and increased susceptibility to secondary infections, as well as higher herd mortality.

In a feeding trial at North Carolina State University in the USA (2022), Cochlosoma anatis infected turkey poults were compared with an uninfected control group and infected animals fed 22.5g of oregano oil per ton of feed.

Performance parameters, mortalities and cochlosoma cells in the small intestine were monitored over the course of the 28 day trial period.

Oregano oil could compensate for the reduction in weight gain and feed conversion rate, caused by the cochlosoma infection and was comparable to the non-infected group of animals (Fig. 5).

Furthermore, the mortality rate of the infected animals receiving oregano was lower compared to the infected control group (Fig. 6).

With the addition of oregano oil, the reduction of cochlosoma cells in the small intestine correlated with the improvements in performance and health compared to infected, non-treated animals (Fig. 7).

Histomonas meleagridis

Histomonads are the causative agents of blackhead disease in poultry. Infection often occurs via ingestion of eggs of the worm Heterakis gallinarum and leads to severe health problems, including lesions in liver and cecum. The mortality rate in turkeys can reach up to 100%.

At the North Carolina State University (2022), a feeding trial was conducted to determine possible beneficial effects of oregano oil on turkey poults infected with Histomonas meleagridis. The animals were infected with Histomonas on day 14 of life. The uninfected group was compared with the infected control group and infected turkeys fed either 22.5g, 37.5g or 150g oregano oil per ton of feed.

Feed intake, live weights, feed conversion, mortality and lesions in caeca and liver were investigated. Oregano oil improved the live weights of the turkeys infected with histomonas and resulted in better feed conversion compared to the infected control group (Fig. 8).

In addition, fewer lesions were observed during resection of the caeca and livers of the infected animals receiving oregano (Fig. 9). The mortality rate of the three oregano groups was also reduced by 10% compared to the control group (Fig. 10).

Conclusion

The antimicrobial, antiprotozoal and antioxidant properties of oregano oil directly affect turkey health by reduction of protozoan oocysts in the intestine and less severe tissue lesions in liver and cecum. The reduced stress leads to more efficient use of feed, a reduced mortality and consequently an increase in profitability. In contrast to coccidiostats oregano oil can be administered without any withdrawal period. ■

Fig. 9. Oregano oil in turkey feed reduces liver and cecum lesions during Histomonas infection.

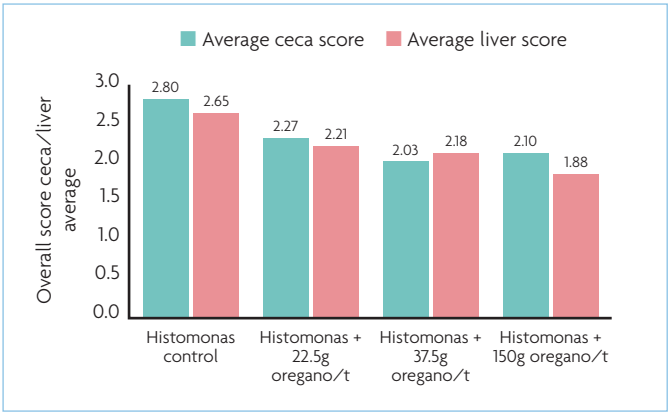


Fig. 10. Oregano oil in turkey feed reduces the mortality rate in case of Histomonas infection.