



## Effects of coriander (*Coriandrum sativum*) on the chemical composition of the muscle in Brook trout (*Salvelinus fontinalis*)

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**Abstract:** Brook trout (*Salvelinus fontinalis*) are commonly found in many salmonid farms in Romania due to their good adaptation to intensive farming conditions in cold waters. While several studies have demonstrated the positive effects of coriander (*Coriandrum sativum*) on various fish species, there is a scarcity of research findings concerning the effects of coriander or other phyto-additives on the meat quality of brook trout. Most studies have focused on rainbow trout instead. Hence, the primary objective of the present study was to investigate the impact of incorporating coriander seed powder into the diet on the chemical composition of brook trout's epaxial muscle following a 106-day experimental feeding period. Coriander seed powder was incorporated into the fish feed at three different concentrations: 2%, 3%, and 4%. A total of 360 juvenile brook trouts were divided into four groups, including the control group and three other experimental groups, each receiving a specific concentration of dietary coriander powder. Each experimental variant was tested in triplicate. At the end experiment, the epaxial muscle's chemical composition (crude protein, crude fat, dry matter, moisture and mineral-ash content) was evaluated. The results obtained indicated that the inclusion of coriander in the diet of brook trout significantly influences the chemical composition of the epaxial muscle, influencing both the protein and fat content, as well as the levels of moisture and ash levels.

### • Introduction

Coriander is an aromatic plant, rich in essential nutrients, including vitamins (A, C and K) and minerals (Ca, K, Mg, Z). Such nutrients help fish to grow and stay healthy by providing vital building blocks for cellular processes, maintenance of physiological functions and energy metabolism.

Previous studies have shown that the use of coriander as a natural phyto-additive in fish feed has positively influenced growth performance, immunity, improved immune and antioxidant response, improving health and productivity in different fish species.

Following a review in the scientific literature, we found that the use of coriander as a phyto-additive in the feeding of brook trout has not yet been addressed.

The study aimed to investigate the impact of incorporating coriander seed powder into the diet as phyto-additive (2%, 3% and 4%) on the chemical composition of brook trout's epaxial muscle following a 106-day experimental feeding period.

### • Material and method

The study was carried out in a trout farm in Roșcani village, (Romania), in cages placed in concrete ponds. Each cage was allocated for a repetition of a variant, resulting 12 cages per pond.

A total of 360 juvenile brook trouts were divided into four groups (90 fish per group), including the control group and three other experimental groups, each receiving a specific concentration of dietary coriander powder: V1 – 2%, V2 – 3%, V3 – 4%. Each experimental variant was tested in triplicate.

At the end experiment (106 days), the epaxial muscle's chemical composition from 5 fish per variant was evaluated. Crude protein content was determined by Kjeldahl method, crude fat content by Soxhlet method, dry matter content, moisture and mineral ash was evaluated by means of standard methods.

The data were analyzed using the STATISTICA software, the significances of differences being assessed using the Duncan test. The statistically processed data in the graphs are presented as Mean  $\pm$  SD.

### • Results and discussions

The data from the graphs indicate that dietary coriander at 2% and 3% significantly ( $P \leq 0,05$ ) increased the crude protein content of fish muscle, with the highest value (20.25% CP) observed in V1 (2% coriander). In all experimental variants, coriander significantly increased the percentage of dry matter, reaching a maximum of 25.78% in V3 (4% coriander). Other data revealed a significant ( $P \leq 0,05$ ) decrease in crude fat in the variants with dietary coriander, with the lowest value recorded in V1 (3.04% fat in epaxial muscle).

### • Conclusions

The results obtained indicated that the inclusion of coriander in the diet of brook trout significantly influences the chemical composition of the epaxial muscle, influencing both the protein and fat content, as well as the levels of moisture and ash levels.

