



## The influence of two dietary citrus peel on performances, color, textural parameters and primary oxidation products of broiler chicken's thigh meat

Petru Alexandru Vlaicu<sup>1</sup>, Tatiana Panaite<sup>1</sup>, Mihaela Saracila<sup>1,3</sup>, Madalina Iuga<sup>2</sup>

<sup>1</sup>National Research-Development Institute for Animal Biology and Nutrition (IBNA), Calea Bucharest 1, Ilfov, Romania

<sup>2</sup>Stefan cel Mare University, Faculty of Food Engineering, Suceava, Romania

<sup>3</sup>University of Agronomic Sciences and Veterinary Medicine of Bucharest, 59 Marasti Blvd, District 1, Romania

### • Introduction

A number of natural bio-actives such as herbal formulations, vegetal by-products, oils and citrus peels have been shown potential for improving the productivity and nutritional quality of poultry. Citrus, is one of the world major fruit crops with global availability and popularity contributing to human diets. Therefore, this study was performed to examine the effect of orange and grapefruit peel as dietary feed on broiler chicken performance, carcass characteristics, color, textural profile and primary oxidation products of broiler chicken's thigh meat.

### • Material and method

➤ 126 Cobb 500 commercial broiler chicks, divided in 3 groups (42 chicks/group) were used to investigate the effect of 2% orange peel (OP) or 2% grapefruit peel (GP) on broiler performances and thigh meat quality.

➤ The feeding trial (14-42 days) was conducted in an experimental hall, split into 3 experimental growth boxes (3.5 sq. m/rearing area), with floor rearing and controlled microclimate.

➤ Throughout the experimental period, daily feed intake (ADFI, g feed/broiler/day), total weight gain (TWG, g), daily weight gain (DWG, g) and feed conversion ratio (FCR, kg) values were registered and calculated.

➤ At the end of the trial, 6 broiler chicks per group were slaughtered and samples of thigh meat were collected in order to determine the proximate chemical composition, color parameters, texture profile analysis (TPA) and the primary oxidation products (conjugated dienes and trienes).

### • Results and discussions

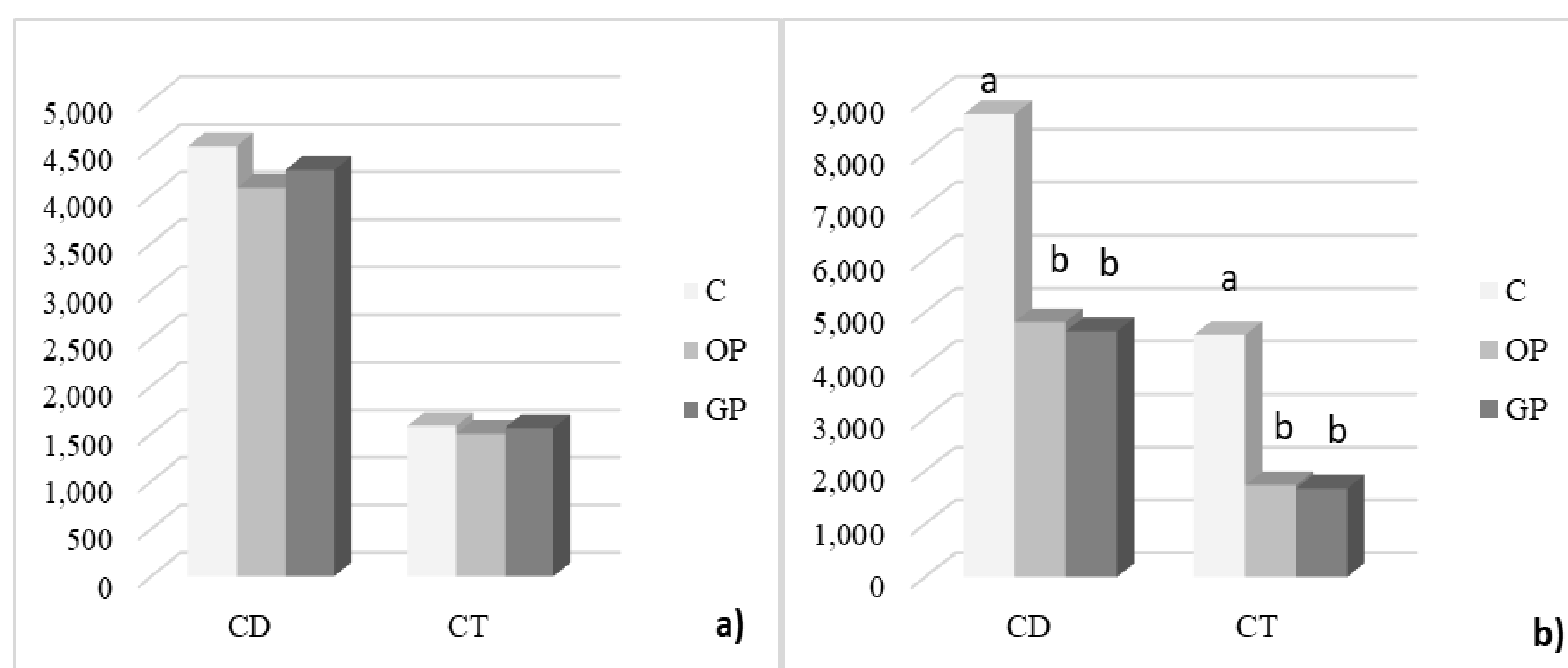
➤ Inclusion of 2% OP in the diets had a significant ( $P < 0.05$ ) effect on broiler chickens performances.

Influence of OP and GP supplements on broiler thigh meat color

Thigh color	C	OP	GP	SEM	P
L	50.22 <sup>a</sup>	52.47 <sup>b</sup>	52.90 <sup>b</sup>	0.448	0.0208
a	3.07	3.05	1.79	0.351	0.2475
b	11.64	12.77 <sup>a</sup>	10.81 <sup>b</sup>	0.325	0.0356
$\Delta E$	0.00	2.57	3.07	na	na

➤ Dietary GP has increased the liver and gizzard weight of the chickens compared with C and OP groups.

➤ Texture parameters of thigh meat determined by a double cycle compression, were improved in OP and GP groups related to C samples.



Effects of dietary OP and GP on primary oxidation products (CD and CT) values of broiler thigh meat at 0 days and after 7 days of refrigeration

### • Conclusions

The use of dietary OP and GP, have beneficial effects on broiler thigh meat quality. The antioxidants deposited in meat lead to greater stability of broiler thigh meat compared to control. Broiler performances could be improved by the use of up to 2% dietary OP but regarding the GP effect on performances more studies are needed.

**Acknowledgement:** This work was supported by a grant of the Romanian National Authority for Scientific Research and Innovation, CNCS/CCCDI - UEFISCDI, project number 8PCCDI/2018 PC3, and by Program 1. Projects funding excellence in R & D, Contract no. 17 PFE.