



EFFECT OF POLYHERBAL FEED SUPPLEMENT AND ANTIMYCOTIC PRODUCT ON MEAT QUALITY ATTRIBUTES OF CHICKEN

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ABSTRACT

To study the impact of inclusion of polyherbal feed supplement and antimycotic formulation on carcass and cooked meat quality aspects I chicken was conducted in 50 unsexed day old broiler chicks that were randomly divided into two groups, one control and treatment. Untreated control (C) was administered standard basal diet without any herbal feed supplement while treatment group was offered polyherbal feed supplement & toxin binder product Vilocym@1Kg/tonne of feed (supplied by Ayurvet Ltd. Baddi, India) alongwith basal diet. Carcass quality traits, cooked meat quality attributes, organoleptic characteristics of cooked meat and proximate analysis of cooked meat were studied at the end of 6 week experimental trial by slaughtering representative birds of both the groups. Supplementation of polyherbal feed supplement & toxin binder product in basal diet was found to be efficacious in improving overall meat quality attributes such as carcass yield, dressing percentage (%), giblet yield, fillet and tender yield, sensory meat characteristics, organoleptic cooked meat parameters, overall palatability and acceptability of meat. The product doesn't have any residual or adverse effect on eating and cooking quality of meat and hence is safe for usage.

Key Words: mycotoxin, carcass, meat quality, organoleptic, polyherbal

INTRODUCTION

In the present scenario, global food security is the major concern. Raw and cooked meat quality is of immense consideration to consumers. Appearance is the major criterion for purchase, selection and initial evaluation of meat quality. The ISO definition of quality is “the totality of features and characteristics of a product that bear on its ability to satisfy stated or implied needs” (ISO, 1986). Quality aspects of meat include food safety, sensory quality, animal welfare and sustainability of production. With respect to sensory quality, appearance is important in choosing meat and factors like taste may dominate over appearance in re-purchase of meat (Dransfield et al., 2005). There is dearth of data on efficacy of supplementing polyherbal phytoadditives to poultry, especially on its carcass characteristics and cooking attributes. Taking this into consideration, the present study was undertaken to evaluate carcass traits, effect of microwave cooking and

sensory evaluation of cooked meat of broilers supplemented with polyherbal feed supplement & mycotoxin binder (Vilocym).

MATERIALS & METHODS

Vilocym is a polyherbal formulation comprising of herbs viz. and many more scientifically well known to possess antimycotic activity. However, the impact of its usage on carcass and cooked meat quality is yet to be explored. With this objective the present study was conducted at Department of Veterinary Public Health, College of Veterinary and Animal Sciences Udgir, Dist. Latur, Maharashtra, India on 50 unsexed day old broiler chicks. Chicks were randomly assigned equally in two groups: control (C) group was offered basal diet without any polyherbal feed additive and treatment group (T) supplemented with Vilocym@1Kg/tonne of feed (supplied by Ayurvet Ltd. Baddi, India) for 6 weeks. Two types of basal diets (starter and finisher) were formulated to meet the nutrient requirements of broiler chicks as per standard recommendations of NRC, (1994). *Ad libitum* water was offered throughout the experimental period as well as artificial lighting was provided 12 hours on daily basis. Both the groups were housed in a brooder cum grower house randomly with standard and identical

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managerial, nutritional and environmental conditions. All the chicks were vaccinated as per routine farm practices.

Post-Slaughter observations: At the end of 6 week experimental study, all the birds of both the groups were slaughtered and dressed using humane methods and hygienic aspects. Dressed weight, fillet and tender yield, total giblet weight i.e. combined weight of heart, liver and gizzard were recorded.

Cooked yield and proximate analysis of microwave cooked breast fillets (MWBF) and microwave cooked chicken tenders (MWCT): carcasses were dressed into basic parts (breasts, thighs, drumsticks, wings, pelvis and backs) observing the method prescribed by the Poultry Meat Quality Regulation (Official Gazetteer of the SFRY 1/81 and 51/88). Dressed carcasses were packed in packing material (LDPE bags) and kept for chilling in refrigerator at $4\pm 1^\circ\text{C}$ for 20 hours. From the breast, the fillets (*Pectoralis major*) and the tenders (*Pectoralis minor*) were removed without disturbing the shape. These dressed carcasses were further used for the evaluation of cooked meat quality attributes, microwave cooked breast fillets and microwave cooked chicken tenders. Standard power-time combination prescribed by the manufacturer of the microwave oven was followed for the cooking and grilling of meat. Marinated fillet and tender pieces were forked and grilled using power-time combination. Weight of the marinated material was recorded.

Proximate analysis of microwave cooked breast fillets (MWBF) and microwave cooked chicken tenders (MWCT) - Moisture (%), protein% and fat% were evaluated for microwave cooked fillets and tenders by adopting the standard methods as per AOAC (1995).

Organoleptic and sensory evaluation - For the consumer sensory testing on the broiler breast fillets, an 8 point hedonic scale (score 8 as excellent and score 1 as extremely poor) as per the method given by Keeton, (1983). Tenderness, juiciness, flavour, and overall preference on microwave cooked chicken breast fillets and tenders of two groups were determined. A minimum of 60 consumer panelists were used in this study. Parameters were evaluated by a trained panel of 6 members. The members were trained on flavour, tenderness, juiciness, and attachment of the meat to the bone. Data was summarized in tabular form for each individual group and the data was analyzed using randomized block design as per Snedecor and Cochran (1994).

RESULT AND DISCUSSION

Evaluation of carcass and meat quality parameters revealed that the treatment group had higher dressed and eviscerated percentage (%). Dressing % of treatment group supplemented with Vilocym (59.64) was significantly ($P=0.05$) better than the untreated control group (53.22) (table 1). Data of breast muscle and fillets (gm) reveal significantly ($P=0.05$) higher yield in the treatment group T (221.25 of fillet and 55.15 of tender) than control group C (188.0 of fillets and 48.5 of tender) (table 1). Total giblet yield (gm) was found to be significantly ($P=0.05$) higher in treated birds (111.75 ± 2.07) than control ($85.33\pm 0.91\text{gm}$), (table 2). This is suggestive of beneficial effect of polyherbal feed supplement product in improving the delicacy (giblet) yield in addition to dressing % and carcass yield. It can also be inferred that the polyherbal mycotoxin binder product is a combination of herbs having active constituent that plays important role in improving quantitative carcass traits of broilers and do not have any residual effect in carcass and meat.

Table 1: Mean Carcass traits of slaughtered birds of control and treatment groups:

Carcass traits	Control Group (C)	Treatment group (T)
Carcass yield (gm)	1067.75 ^a	1230.58 ^b
Dressing %	53.22 ^a	59.64 ^b
Fillet yield (gm)	188.0 ^a	221.25 ^b
Tender yield (gm)	48.5 ^a	55.15 ^b

Means bearing different superscripts differ from each other at ($P=0.05$)

**Table 2: Mean giblet Weight of slaughtered birds of two groups (control and treatment)**

Weight (gm)	Control Group (C)	Treatment group (T)
Liver	35.33 ^a	53.25 ^b
Heart	41.50 ^a	46.67 ^b
Gizzard	8.50 ^a	11.67 ^b
Giblet Weight	85.33 ^a	111.75 ^b

Means bearing different superscripts differ from each other at ($P=0.05$)

Table 3: Mean Proximate Analysis data of microwave cooked meat of control and treatment groups

Traits/groups	Fillet		Tender	
	Control Group (C)	Treatment group (T)	Control Group (C)	Treatment group (T)
Moisture %	70.11	68.48	70.29	65.64
Protein %	55.25	57.51	59.88	55.44
Fat %	7.46	6.5	9.47	8.58

Table 4: Mean Sensory evaluation of microwave cooked meat (fillets and tenders) of control and treatment groups

Traits/groups	Fillet		Tender	
	Control Group (C)	Treatment group (T)	Control Group (C)	Treatment group (T)
Appearance	6.3	7.3	6.83	6.83
Colour	6.1	6.83	6.5	6.5
Odour	5.8	6.33	6	5.83
Juiciness	6.1	5.66	6.33	6.16
Texture	6.3	6.3	6.5	6.33
Tenderness	6.16	6.16	6.5	6.66
Flavour	6.0	6.5	6.5	6.66
Overall Palatability	6.3	6.66	6.83	7.0

Proximate analysis of cooked meat (table 3): Moisture, Protein and fat% of cooked meat of polyherbal mycotoxin binder feed additive supplemented group is well comparable and non-significantly different from control group. Similarly, protein and fat % of tenders and fillets of treated groups is also in confirmation and non-significantly different from untreated control group. This indicates that addition of phytoadditive Vilocym don't exert any deleterious effect on the proximate cooked meat quality parameters rather optimizes protein and fat content of microwave cooked meat hence maintaining quality of meat.

Sensory evaluation of microwave cooked meat of both the groups revealed that appearance of fillets and tender in group supplemented with Vilocym (T) was better than untreated control (C) (table 4). Appearance of fillets and tender in treated group (T) was scored higher (7.0) than the control group C (6.3). This suggests that administration of polyherbal product has positive impact in improving organoleptic characteristics of meat in addition to improving dressing % and do not exert any adverse effect on the quality or acceptability of meat (with reference to appearance). Results of appearance for treated group (T) fall in normal range and are in



confirmation with those reported by Dransfield *et al.*, 2005. Color and odour of cooked poultry meat is important because consumers associate it with the product's freshness, and they decide whether or not to buy the product based on their opinion of its attractiveness. It is the only species known to have muscles that are dramatic extremes in color (white and dark meat) (Pearson *et al.*, 1983). Breast meat is expected to have a pale pink color when it is raw, while thigh and leg meat are expected to be dark red when raw. There are times when poultry meat does not have the expected color and this has created some special problems for the poultry industry. The desirable meat colour most accepted to consumers is pinkish to red, light meat colour are scored high on hedonic scale than dark meat colours (Keeton, 1983). Meat colour scores measured on 8-point scale revealed that meat colour for fillets and tenders at 45 minutes post slaughter was scored higher in treated group than control. More is lighter the meat colour, higher is the score for colour on hedonic scale and more is the preference by the consumers for the meat. Several researchers have also demonstrated that a significant negative correlation exists between breast meat lightness color values and breast meat pH (Allen *et al.*, 1997). Similarly off-odours are the major criteria of raw and cooked meat rejection. The odour of microwave cooked fillets and tenders of treated groups was also scored higher than control suggesting that administration of polyherbal product do not lead to any deterioration in colour or odour of cooked meat, the product is completely safe for usage and it do not exert any undesirable effect on organoleptic characteristics like colour, odour and juiciness of meat. Flavour and tenderness of meat are another most important organoleptic characteristic that also regulates acceptability of meat. In present experiment, supplementation of herbal products has been shown to improve the flavour and tenderness of microwave cooked meat. Flavour and tenderness of fillets and tenders of treated group was also scored higher and well comparable to the untreated control. It can be inferred that supplementation of polyherbal mycotoxin binder & feed supplement product Vilocym may contain certain herbs that improved myofibrillar solubility of muscles, in turn improving

the tenderness of edible muscles. Brown *et al.*, (2008) also reported that flavour liking and overall palatability of meat from birds produced in the standard system was most preferred as observed based on hedonic assessments of meat quality attributes, by a small panel of assessors. Data of sensory evaluation showed that the chicken of treatment group administered Vilocym alongwith feed has comparatively better overall palatability and acceptability.

CONCLUSION

It can be concluded that supplementation of polyherbal antimycotic & feed supplement Vilocym was efficacious in improving overall meat quality attributes such as carcass yield, dressing percentage, giblet yield, fillet and tender yield, proximate cooked meat values, organoleptic cooked meat parameters, overall palatability and acceptability of meat. The product doesn't have any residual or adverse effect on carcass traits, eating and cooking quality of meat and hence is safe for usage.

REFERENCES

- AOAC, (1995). Official methods of Analysis. Association of official Analytical Chemist. Vol.-1, 16th Ed., AOAC. International, Arington: USA: 31-65.
- Brown, M.H. (1982). Meat microbiology. Elsevier Applied Science Publishers, London.
- Dransfield, E. Ngapo, T.M. Nielsen, N.A. Bredahl, L. Sjöden, P.O. Magnusson, M.; Campo, M.M. and Nute, G.R. (2005). Consumer choice and suggested price for pork as influenced by its appearance, taste and information concerning country of origin and organic pig production. *Meat Science*: **69**: 61-70.
- Keeton, J. T. (1983). Effects of fat and NaCl/phosphate levels on the chemical and sensory properties of pork patties. *J. Food Sci.*: **48**: 878881.
- Ladefoged, O. (1996). Drug residues in food of animal origin and related human hazards. *In: Proc. Int. Workshop on Rational Applications of Vet. Pharmaceuticals and Biologicals*. Balochistan Livestock Dev. Project, L & DD, Govt. of Balochistan, Quetta: 1-3: 246253.
- Pearson, A.M., Gray, J.I. Wolzak, A.M. and Horenstein, N. A. (1983). Safety implications of oxidized lipids in muscle foods. *Food Tech.*: **37**: 121-129.
- Snedecor, G.W. and Slen, S.B. (1994). *Statistical Method*. 8th Ed. Iowa State University, Press, Ames IOWA.