

EFFECT OF GUAVA POWDER ON PROXIMATE AND SENSORY CHARACTERISTICS OF FUNCTIONAL CHICKEN MEAT NUGGETS

**R. Jayanthi^{1*}, V. Appa Rao¹, Robinson J.J. Abraham², C. Valli³
and C. Vasanthi¹**

Department of Livestock Products Technology (Meat Science)
Madras Veterinary College, Tamil Nadu Veterinary and Animal Sciences University, Chennai - 7

Poultry meat products are desirable component in our diet. They are important sources of protein, essential vitamins and minerals. However, in recent years the concerns are towards meat products having high levels of saturated fatty acids, cholesterol, salt and deficiency of dietary fibre. In order to alleviate these concerns, healthier meat products and/or functional meat products are gaining popularity. These products either possess functional ingredients that improve health or contain lesser quantity of undesirable compounds like cholesterol, fat etc. Reformulation of chicken products by incorporating health enhancing ingredients like green vegetables, fibre, vegetables proteins, PUFA, antioxidants etc. is one of the best methods to produce healthier chicken products (Devatkal *et al.*, 2008). Meat and meat products are very low in dietary fibre content and hence the intake of dietary fibres along with them has a great role in the nutrition/digestive system. These dietary fibres are concentrated in cereals, pulses, fruits and vegetables and their daily intake helps in prevention of many nutritional disorders, gut related problems,

cardiovascular diseases, type 2 diabetes, certain types of cancer and obesity (Verma 2010).

Guava (*Psidium guajava*. L) fruit is considered as highly nutritious because the peel and pulp of guava (*Psidium guajava*. L) fruit has high levels of dietary fibres, indigestible fraction, and phenolic compound (Mercadante *et al.*, 1999). Hence, the study was conducted to prepare functional chicken meat nuggets with the addition of guava powder to enhance the dietary fibre content in the product.

Chicken meat nuggets were prepared by using lean chicken meat along with particular levels of other ingredients. Chicken meat was minced and added with the pre weighed quantities of salt (2%), sodium nitrite (0.012%) and sodium tri polyphosphate (0.3%) one by one and mixed by hand. Ice flakes (10%) and refined vegetable oil (10%) were added slowly in between until the complete dispersal. Then Condiment paste (4%), pepper (1%), spice mix (2%) and refined flour (10%) were added one by one. The final emulsion was taken as control. For treatments, the guava

^{1&2}Department of Livestock Products Technology (Meat Science)

³Department of Animal Nutrition, Madras Veterinary College, Chennai – 600 007

*Corresponding author

powder was added at three different levels viz. 0.5, 1.0 and 1.5 per cent to the final emulsion and mixed by hand. The emulsion was then filled uniformly into aluminium moulds and cooked in steam for 30 minutes until it reaches the internal temperature of 72° C.

The proximate composition of functional chicken meat nuggets were analyzed by following the standard procedure of AOAC (1995). The sensory qualities of chicken meat nuggets was assessed by subjecting the nuggets samples to the sensory scores of appearance, flavour, texture, juiciness and overall acceptability by a trained and semi-trained taste panel drawn from the Department of Livestock Products Technology (Meat Science), Madras Veterinary College, Chennai- 600 007 on a nine point hedonic scale as given in the score card. The data was subjected to statistical analysis in SPSS (version 20.0) software as per the standard procedure outlined by Snedecor and Cochran (1994).

The proximate analysis revealed that there was no significant difference ($P>0.05$) in protein, fat and ash content (%) of control and three levels of guava powder incorporated chicken nuggets. There was highly significant ($P<0.01$) difference in moisture and dietary fibre content (%) between control and treatments (Table 1). The increasing levels of guava powder showed decreasing trend in the moisture content and increasing trend in the dietary fibre content. This is due to the higher dietary fibre content of guava powder (Verma *et al.* 2013).

There was no significant difference ($P>0.05$) in values of appearance, flavour, texture, juiciness and overall acceptability scores of control, 0.5, 1 and 1.5 per cent levels of guava powder incorporated chicken nuggets (Table 2). Apparently there was a higher score for 1.5 per cent guava powder incorporated chicken nuggets in all the sensory values. These similar results were observed by Verma *et al.* (2013) also in sheep meat nuggets with the incorporation of guava powder.

Based on the above findings it has been concluded that the fiber enriched functional chicken meat nuggets can be prepared with incorporation of 1.5 per cent guava powder without affecting the physico-chemical and sensory characteristics of the product and it can be recommended to the people/patients with hypertension, bowel disorders, Ischemic Heart Diseases, etc.,

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Table 1. Proximate composition of chicken nuggets incorporated with different levels of guava powder

Parameters	Control	Different levels of guava powder (%)			F value
		0.5	1.0	1.5	
Moisture (%)	64.23 ^b ± 0.40	64.20 ^b ± 0.55	61.90 ^a ± 0.63	61.05 ^a ± 0.38	10.418 ^{**}
Protein (%)	17.23 ± 0.37	17.45 ± 0.58	17.93 ± 0.40	17.77 ± 0.31	0.540 ^{NS}
Fat (%)	23.52 ± 1.46	22.32 ± 1.36	22.58 ± 1.37	20.90 ± 0.87	0.709 ^{NS}
Ash (%)	5.37 ± 0.28	5.33 ± 0.21	4.82 ± 0.25	4.73 ± 0.22	1.921 ^{NS}
Dietary fibre (%)	1.19 ^a ± 0.03	2.36 ^b ± 0.01	4.43 ^c ± 0.02	5.93 ^d ± 0.01	13706.42 ^{**}

Means bearing different superscripts (a, b, c and d) within rows differ significantly (P<0.01)

n=6

NS - Not Significant

** - Highly Significant (P<0.01) difference

Table 2. Sensory evaluation of chicken nuggets incorporated with different levels of guava powder

Parameters	Control	Different levels of guava powder (%)			F value
		0.5	1.0	1.5	
Appearance	7.33 ± 0.22	7.43 ± 0.19	7.78 ± 0.21	7.92 ± 0.16	1.996 ^{NS}
Flavour	7.22 ± 0.32	7.45 ± 0.18	7.83 ± 0.22	7.78 ± 0.14	1.698 ^{NS}
Texture	7.32 ± 0.28	7.30 ± 0.20	7.57 ± 0.17	7.75 ± 0.19	1.007 ^{NS}
Juiciness	7.07 ± 0.30	7.38 ± 0.20	7.62 ± 0.17	7.62 ± 0.08	1.662 ^{NS}
Overall acceptability	7.15 ± 0.30	7.22 ± 0.23	7.67 ± 0.20	7.90 ± 0.12	2.660 ^{NS}

n=6

NS - Not Significant