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Standardisation of Recipe for Fish Cutlet Product from fresh water fish Catla (*Catla Catla*)

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ABSTRACT

A method of preparation of fish cutlet, having a standard size of 5 cm diameter, 1 cm thickness and 30 g weight from Catla catla meat has been developed. Different ingredients viz., cooked potatoes, salt, green chilly, ginger and garlic (GGG) were standardised for preparation of cutlets. The sensory evaluation showed that the ratio of 70:100 (w/w) cooked potatoes to catla meat was found superior than 30:100, 50:100, 70:100, 90:100 and 110:100 (w/w) ratios in the cutlet. Ratio of 3:100 (w/w) of table salt to fish meat was found to be appropriate as compared to 2:100, 3:100, 4:100 and 5:100 (w/w) ratios. Ratio of 5:100 (w/w) of green chilly, ginger and garlic (GGG) to catla meat was found to be superior on sensory evaluation as compared to 7:100, 6:100, 5:100 and 4:100 (w/w). These standardised ingredients ratios were used in cutlet recipe.

Keywords: *Catla catla*, cutlets, sensory evaluation, ginger, garlic

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INTRODUCTION

There is a great scope to increase the fish consumption in India and marketed in variety of value added products form as whole, filleted, steaks, somked, cured and marinated. Some more innovative value added foods are ready-to-cook fish fillets, fingers, patties, burger, sausages, pizza [1]. The cultured freshwater fish contains omega 3 and 6 polyunsaturated fatty acids, of n-3 type which have beneficial effect on human health. For enrichment purpose non-vegetarian population also prefer freshwater fish in their diet [1]. Fish and fishery products contain high quality protein and other necessary nutrients; they are low in saturated fatty acids and contain high content of unsaturated fatty acids [2]

The herbivorous feeding habit of these fishes makes them easy to culture in low-input technology systems. The Indian major carps being the high-protein food form a major component of the Indian aquaculture, but carps have limited consumer acceptability because of the presence of intramuscular bones. Processing of carps into value-added battered products enhance their acceptability and market value as revealed by the sensory evaluation of the product [3]. During recent years, fish processing, product development and value-addition have received wider attention because of increased urbanization, more and more women having jobs and domestic help becoming expensive [4] .
There is a growing demand for ready-to-eat and ready-to-cook convenience products due to social and cultural changes in recent years. One of the most important foods in this group is battered products [5]. The process of coating with batter and bread crumbs increases the bulk of the product, thereby reducing the content of costly fish

and thus reducing the cost product [4].In the present study a value added battered and breaded product "fish cutlet" developed from freshwater fish Catla (*Catla catla*) using standardised the recipe.

MATERIALS AND METHODS

Fresh catla (*Catla catla*) procured from freshwater fish market of Kolhapur for preparation of fish cutlet and brought to processing hall under iced condition. The fish was washed with potable water, dressed and cooked in boiling water for 30 min. and cooked meat was separated manually, meat then stored in deep freezer at a temperature of -14ºC until further use. As and when required, fish meat was taken out and thawed before use. Cooked potatoes, peeled and mashed to fine paste. Chopped onions fried in sunflower oil till it becomes brown. Bread crumbs were used as coating material.

Standardization in the basic recipe [6] (Table 1) were carried out by varying the ratios of different ingredients. Firstly the fish meat was mixed with boiled potatoes, salt and turmeric powder and kept aside then chopped onions were fried in oil until brown in colour then mixed with green chilly, ginger and garlic paste followed by the powdered spices (Turmeric powder, clove powder, cinnamon powder and pepper powder) then mixing of meat base with the fried spices and cooked. Then cutlets of 30gm weight were taken and flattened to 1cm thickness, dipped into batter mix rolled over breadcrumbs and fried in sunflower oil till it becomes brown in colour then subjected to sensory evaluation.

Fish cutlet were prepared keeping the constant level of oil 10 ml (w/w), powdered spices (Turmeric powder 0.2 gm (w/w), clove powder 0.3 (w/w), cinnamon powder 0.2 gm (w/w), pepper powder 0.3 gm (w/w))and bread powder 20 gm (w/w) while varying quantities of cooked potatoes, salt and ratio of green chilly, ginger and garlic (GGG) were used for standardising the recipe. The fried cutlet were subjected to organoleptic evaluation by a group of ten trained panelist using 9 point hedonic scale [7] on the attributes such as colour, taste, texture, odour and overall acceptability.

Potato was standardised in basic recipe and fish cutlet was prepared with incorporation of different ratios of potato to catla meat such as 30:100 (T_1), 50:100 (T_2), 70:100 (T_3), 90:100 (T_4) and 110:100 (T_5) (w/w). All other ingredients were kept constant. Organoleptic evaluations were carried out to find best ratio.

Salt was standardised in basic recipe and fish cutlet was prepared keeping the standard ratio of potato obtained from its standardisation 70:100(T_3), with different ratios of salt to catla meat, such as 2:100 (T_1), 3:100 (T_2), 4:100 (T_3) and 5:100 (T_4) (w/w). All other ingredients were kept constant and prepared cutlets were organolpetically evaluated for the best combination.

Ratios of green chilly, ginger and garlic (GGG) was standardised in basic recipe and fish cutlet was prepared keeping standard ratio of potato 70:100 (T_3) and salt 3:100 (T_2) with different ratios of green chilly, giner and garlic (GGG) to catla meat such as 7:100 (T_1), 6:100 (T_2), 5:100 (T_3) and 4:100 (T_4) (w/w). All other ingredients were kept constant. Prepared cutlets were organoleptically evaluated for the best combination.

The final catla cutlet was prepared using standardised recipe (Table 1) keeping the standardised ratios of potato 70:100 (T_3), salt 3:100 (T_2) and ratios of green chilly, ginger and garlic 5:100 (T_3).The proximate composition *viz.* moisture, crude protein, crude fat, ash and carbohydrate content of cutlet were determined following standard methods [8]

Table 1. Basic and Standardized recipe of fish cutlet

Ingredients	Basic recipe (Kamat, 1999) Quantity (g)	Standardized recipe Quantity (g)
Cooked fish meat	100	100
Table salt	5	3
Green chilly	6.5	5
Coriander leaves	5	5
Ginger	7.5	5
Garlic	5	5
Onion	25	25
Potato cooked	50	70
Pepper powder	0.3	0.3
Clove powder	0.3	0.3
Cinnamon powder	0.2	0.2
Turmeric powder	0.2	0.2
Bread powder	20	20

Note: Oil – Sunflower oil was used 10 (ml) for heating purpose

RESULTS AND DISCUSSION

Standardisation of different ingredients viz., potato70:100(T_3), salt 3:100 (T_2) and ratios of green chilly, ginger and garlic 5:100 (T_3) showed better organoleptic values compared to other ratios (Fig.1, Fig.2, Fig.3, Fig.4) The organoleptic evaluation of the cutlet indicated the highest score for this standardised recipe (Table 1) (Fig. 4).

Fish cutlet prepared with 70:100 (w/w) ratio of potato to catla meat was superior as compared to the other ratios of potato to catla meat used for preparation of cutlet (Fig. 1).

Joseph and Perigreen [9] used 50:100 ratio of potato in cutlet prepared from horse mackerel, ribbon fish, pola, vatta and mackerel tuna. Kamat [7] used 50:100 ratio of potato in cutlet prepared from mackerel (*Rastrelliger kanagurta*). Species differentiation and higher ratio of potato to meat increased more starch in the cutlet and bind all ingredients properly. Higher potato ratio reduces cost of cutlets. Similar results with slight variation were found by [9] and [7]
Fish cutlet prepared with 3:100 (w/w) ratio of salt to catla meat was superior as compared to the other ratios of salt to catla meat used for preparation of cutlet (Fig. 2).

Similar results were observed by [10] they used 3:100 ratio of salt in cutlet prepared from lizard fish, threadfin bream, jew fish and miscellaneous fish (comprising mainly soles, caranx, jew fish, threadfin bream and glassy perch). Joseph and Perigreen [9] used 3:100 ratio of salt in cutlet prepared from horse mackerel, ribbon fish, pola, vatta and mackerel tuna. Ninan *et al.* [12] used 3:100 ratio of salt in cutlet prepared from tilapia (*Oreocromis mossambicus*).

Catla fish cutlet prepared with 5:100 (w/w) ratio of green chilly, ginger and garlic (GGG) to catla meat was superior as compared to the other ratios of green chilly, ginger and garlic to catla meat used for preparation of cutlet (Fig. 3).
Kamat [7] used 6.5:100, 7.5:100 and 5:100 ratio of green chilly, ginger and garlic respectively in cutlet prepared from mackerel (*Rastrelliger kanagurta*)

Species differentiation may cause difference in the ratio of green chilly, ginger and garlic (GGG) to meat. In the present study as per the opinion of panelist, the higher ratio of green chilly, ginger and garlic was making a very spicy taste of cutlet. Therefore, the ratio of 5:100 (w/w) green chilly, ginger and garlic to meat were used for better taste.

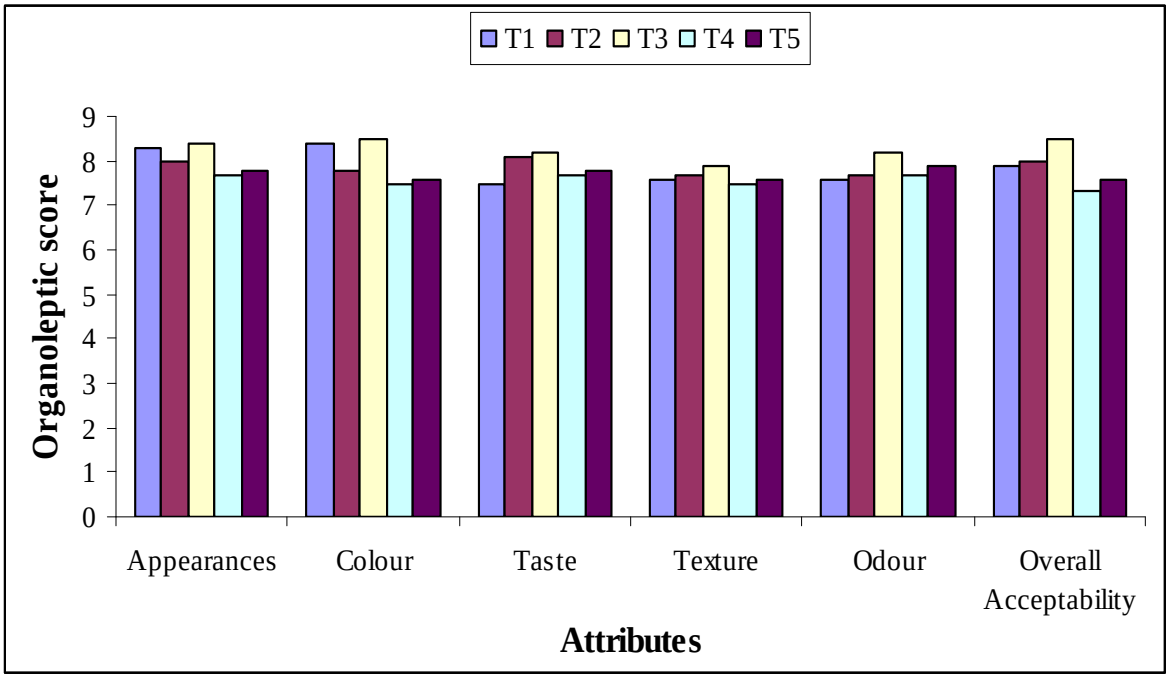

Fig.1. Organoleptic evaluation of catla fish cutlet with different ratios of potato (n=10).

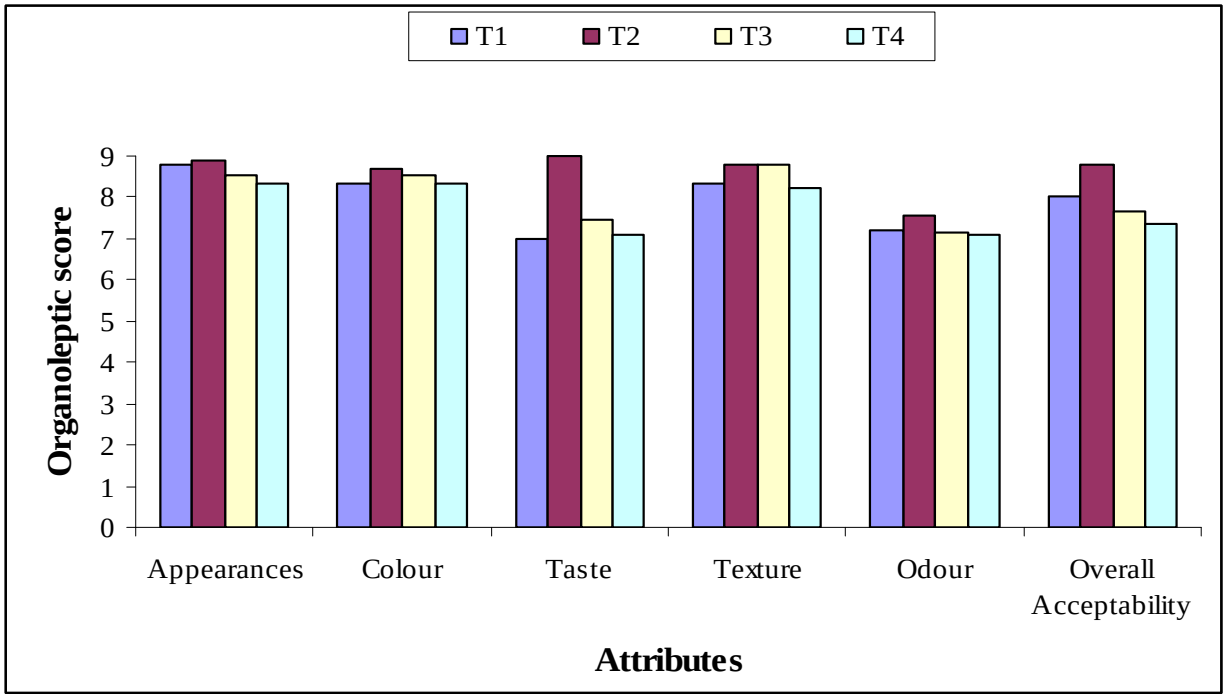

Fig.2. Organoleptic evaluation of fish cutlet with different ratios of salt (n=10).

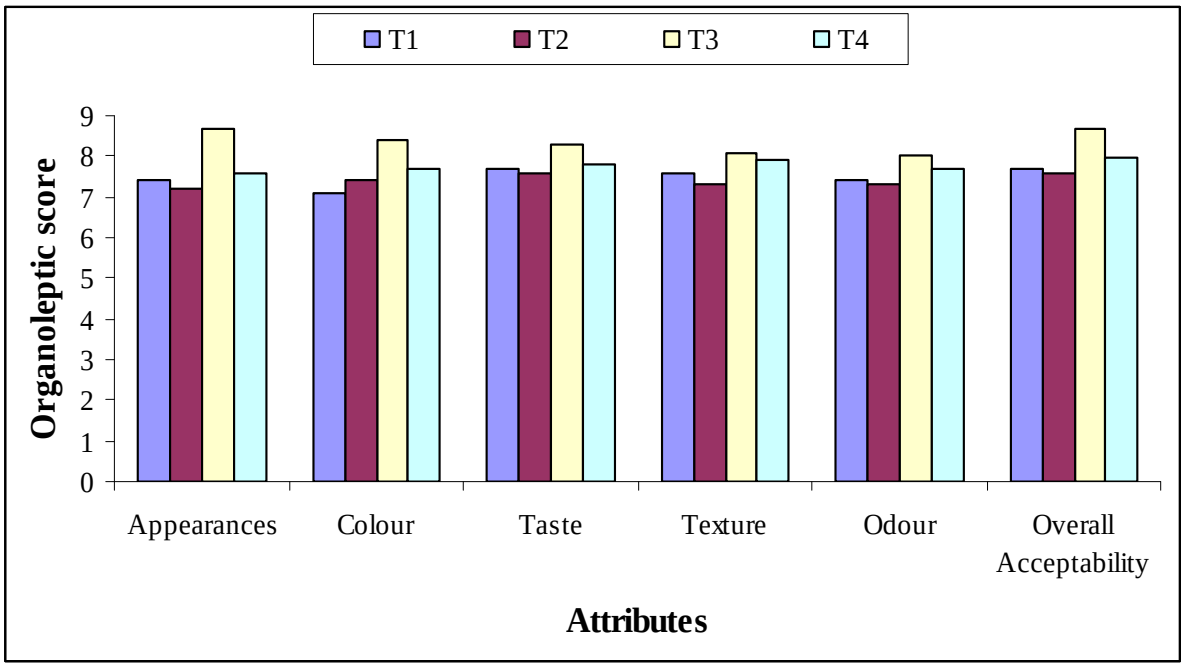

Fig.3. Organoleptic evaluation of catla fish cutlet with different ratios of green chilly,giner and garlic (GGG) (n=10).

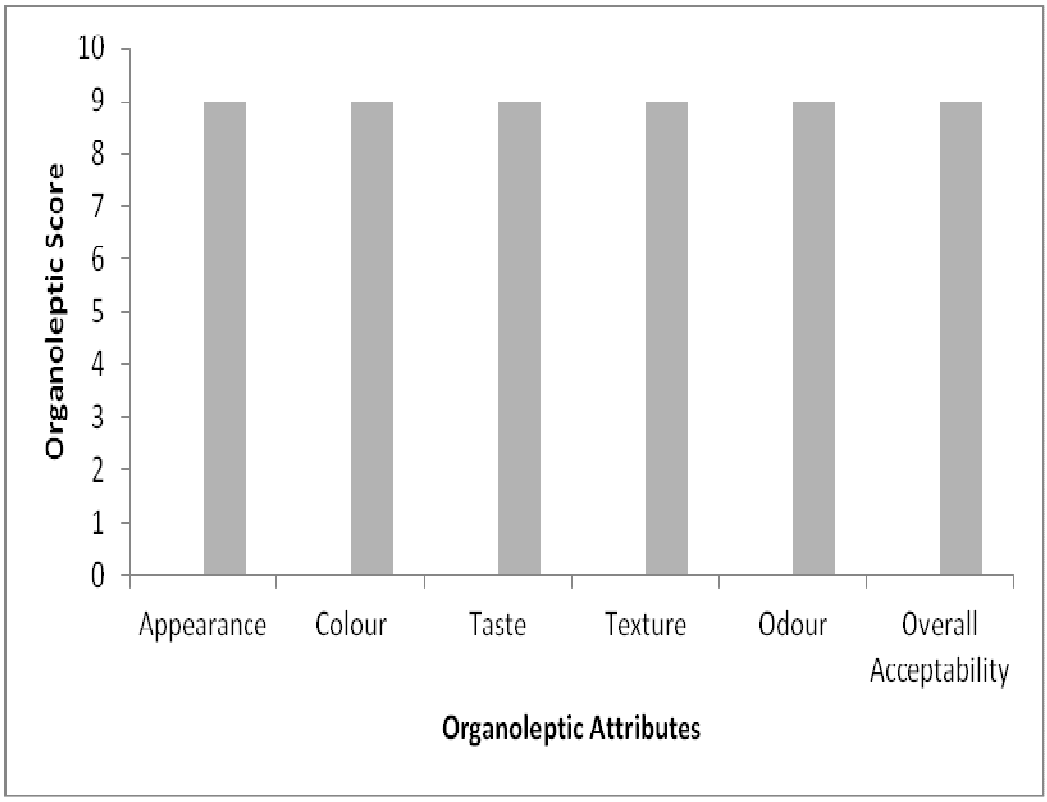

Fig. 4 Organoleptic evaluation of standardised catla cutlet recipe

Table 2. Organoleptic evaluation of standardised recipe of catla fish cutlet[1]

Attribute	Organoleptic Score
Appearance	9
Colour	9
Taste	9
Texture	9
Odour	9
Overall Acceptability	9

[1] *Where number of panellist are 10 (n=10)*

The proximate composition of catla cutlet showed moisture 65.71 %, crude protein 16.57 %, fat 14.50 % and ash 3.22 % (Table 3).

Simillar reports with slight variation was reported by [10] they observed that moisture, protein, fat and ash content in flash fried and raw cutlet was 62.65, 15.41, 5.92 and 1.88% and 66.39, 16.51, 3.74 and 199% respectively. Crab cutlet prepared by [11] content moisture, protein, fat and ash were 67.72, 17.07, 8.36 and 4.00% respectively. Kamat [17] reported fish cutlet prepared from bleached and unbleached fish meat content of moisture, protein, fat and ash were 65.01, 12.06, 6.31 and 1.39% and 60.21, 16.20, 14.32 and 1.43% respectively. Ninan *et al.*[12] reported tilapia fish cutlet content of moisture, protein, carbohydrate, fat and ash were 65.10, 17.51, 13.47, 2.14 and 1.78% respectively.

Table 3. Proximate composition of catla fish cutlet

Attribute	**Value**
Moisture (%)	58.22
Crude Protein (%)	16.41
Fat (%)	17.28
Ash (%)	3.56
Carbohydrate (%)	4.53

CONCLUSION

Carps are the backbone of Indian freshwater aquaculture comprising around 85% of the total freshwater production. Among the Indian major carps the contribution of catla alone is about 30% towards the total production which is

used for preparation of battered and breaded fish cutlet. Cutlet prepared using standardised recipe was excellent in taste, texture, colour, odour and have good overall acceptance.

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