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Organoleptic evaluation of wet-salted marine fishes *Mugil cephalus*, *Chanos chanos* and *Gerres oyena* from Port Sudan coast

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Abstract

The organoleptic properties of wet-salted marine fishes *Mugil cephalus*, *Chanos chanos* and *Gerrses oyena* were evaluated. The study showed that there is a marked preference of wet-salted *M. cephalus* to *C. chonas* and *G. oyena*. *Mugil cephalus* fish prepared at 20% salt concentration ranked as number one in the different organoleptic tests performed. The panel members disliked the colour of wet salted *C. chonas* and the texture of wet salted *G. oyena*. Wet-salted *G. oyena* (25%) scored the lowest rank with respect to all organoleptic tests.

Keywords: Wet-salted. Marine, fishes, organoleptic

Introduction

The Red Sea fish species of Sudan, which exceeds 400 (Randal) ^[1], were not investigated scientifically for their wet salted products. Bacteria spoils captured fish quickly rendering its preservation a necessity (Mohamed *et al.*) ^[2]. Salting is one of the oldest methods used by man to preserve fish (Essuman, 1992) ^[3]. Wet or dry salting extracts water from fish flesh and slows down microbial growth and enzymatic activities (Essuman) ^[3]. Wet-salting of fish enhances taste, solubilizes protein and creates a desirable texture and impair microbial growth (Tropical Products Institute) ^[4].

Organoleptic properties of wet salted fish vary with the fish species and the salt concentration and the preparation method (Abd-Alla; Aberoumand) ^[5, 6] or sun drying methods (Hasan *et al.*) ^[7] or fermentation methods (Houessou *et al.*) ^[8]. Organoleptic properties of fishes varied with the wet-salting preparation method (Abd-Allah; Aberoumand) ^[5, 6] Fermentation of fish is a process of treatment aimed essentially at obtaining a particular flavour (Houessou *et al.*) ^[8] Since the work of Meilgaard *et al.* ^[9] several sensory evaluations approached appeared (Lauritzsen *et al.* Czerner *et al.*) ^[10, 11]. Sensory evaluation for overall acceptability indices indicated that acceptability varies with the fish species salting duration and storage temperature (Srikar *et al.* Abu Gideiri *et al.* Immaculate *et al.*) ^[12, 13, 14].

The objective of this work is to determine the organoleptic properties of wet salted *M. cephalus*, *C. chonas* and *G. oyena* prepared at 15, 20 and 25% salt concentrations.

Materials and Methods

Highly fresh specimens of *Mugil cephalus*, *Chanos chanos* and *Gerres oyena* were purchased from Port Sudan Central Fish Market. Specimens were kept chilled till processed in the laboratory. From each species fessikh was made at 15, 20 and 25% salt concentrations. A random panel of 25 persons of different age groups, education levels and tribal affiliation, were offered coded prepared wet salted fish in form of traditional fesseikh dish. Members of the panel were asked to comment on taste, colour, smell and texture and rank the 9 offered dishes from 0 to 8.

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Results

The results of organoleptic tests (Table 1) revealed that:

1. There is a marked preference of wet-salted *M. cephalus* to *C. chonas* and *G. oyena*.
2. Wet-salted *M. cephalus* fish prepared at 20% salt concentration ranked as number one in the different organoleptic tests.
3. With respect to taste and smell, the order of preference was *M. cephalus* > *C. chonas* > *G. oyena*.
4. The order of preference of colour was *M. cephalus* > *G. oyena*. However, the colour of wet salted *C. chonas* was disliked by all members of the panel test.
5. The panel members preferred the texture of *M. cephalus* to that of *C. chonas*. However, the texture of wet salted *G. oyena* was disliked by all members of the panel.
6. Wet-salted *G. oyena* (25%) scored the lowest rank with respect to all organoleptic tests.

Table 1: Organoleptic scores of fessikh prepared from *Mugil cephalus*, *Chonas* and *Gerrus oyena*, with different salt concentrations.

Trait	Score	<i>Mugil cephalus</i>			<i>Chanos chanos</i>			<i>Gerres oyena</i>		
		15%	20%	25%	15%	20%	25%	15%	20%	25%
Colour	No.	2	14	3	0	0	0	4	1	1
	%	8	36	12	0	0	0	16	4	4
Smell	No.	4	10	1	1	1	2	1	1	0
	%	16	40	4	4	4	8	4	4	0
Texture	No.	2	16	5	1	3	2	0	0	0
	%	8	64	20	4	12	8	0	0	0
Taste	No.	2	15	2	2	1	1	1	1	0
	%	8	60	8	8	4	4	4	4	0

Discussion

The present study showed that there is a marked preference of wet-salted *M. cephalus* to *C. chonas* and *G. oyena*. *Mugil cephalus* fish prepared at 20% salt concentration ranked as number one in the different organoleptic tests. The panel members disliked the colour of wet salted *C. chonas* and the texture of wet salted *G. oyena*. The wet-salted *G. oyena* (25%) scored the lowest rank with respect to all organoleptic tests.

Srikanth *et al.* [12] used the peroxide value, the total volatile nitrogen base and the free fatty acid content as chemical acceptability indices of stored fish products. They found that storage of dry salted *Rastrelliger kanagurta* and the pink perch *Nemipterus japonicus* at (26.8±3.3 °C) considerably extend the shelf life of salted fish compared with storage at 2.5±1 °C.

Abd-Allah [5] examined 17 samples of wet-salted *M. cephalus* fish for organoleptic properties. The trait examined were appearance, juiciness, saltiness, rancidity, flavor and general acceptability. He showed that 15 (88%) of the samples were organoleptic ally accepted.

Aberoumand [6] found that the organoleptic characteristic of fillets of *N. japonicas*, *Saurida undosquamis* and *Carangoides malabaricus* fishes varied with the preparation methods used.

Hasan *et al.* [7] studied and compared the organoleptic characters of *Mastacembelus pancalus*, *Channa punctatus*, *Puntius sophore* and *Mystus vittatus*. They found that the colour, texture and odour of the product obtained by improved sun drier were excellent compared with those obtained by using traditional sun driers. According to Immaculate *et al.* [14] *Scomberoides lysan* marine fish wet-salted in 25% brine had excellent quality with a high sensorial acceptance.

It is recommended that from consumer preference and economic stand points to make fessikh from *M. cephalus* at 20% salt concentration. This postharvest treatment is cheap and requires no special skills and can be adopted by the gender as an income generating activity.

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