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Storage life of marinated tandoori chicken drumsticks under chilled storage

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Abstract
In the present investigation an attempt was made to evaluate the storage life of marinated tandoori chicken drumsticks with control raw chicken drumsticks were evaluated for various quality parameters of chicken meat for six to seven days under chilled storage conditions of below 4 ºC. There was little deteriorative changes observed in the scores of quality parameters of fresh raw chicken drumsticks when compared to marinated chicken tandoori drumsticks as storage life progressed from one to six days at chilled storage of below 4 °C.

Keywords: chicken tandoori drumsticks, Marination, Storage life

1. Introduction
Tandoori chicken drumsticks are crispy on the outside, juicy and tender inside, and packed with delicious flavor. This easy dinner is a traditional Indian meal that is typically made in a tandoor oven, but we have adapted it to an easy-to-make at home dinner that you can cook in the oven, stovetop, or on the grill. With quick prep and just a few dishes, this will become a staple on busy weeknights. Plus, if you marinate the chicken in advance, it will absorb more delicious flavor and will just require a simple pop into the oven. So simple and tasty. Hence, the raw chicken drumsticks were marinated with tandoori spice mix to increase the shelf life of chicken drumsticks.

2. Materials and Methods
The study was carried out to compare the storage life of marinated chicken tandoori drumsticks with raw chicken drumsticks under chilled storage conditions. Different quality parameters of meat was evaluated.

2.1 Experimental design
Fresh chicken drumsticks of commercial broilers were procured from a local market in Hyderabad. The chicken drumsticks were marinated with tandoori spice mix and packed and kept at below 4 °C. The raw chilled chicken drumsticks (without marination) are used as a control. The experimental parameters of both control and marinated tandoori chicken drumsticks samples were assessed for six days under chilled storage of below 4 ºC.

Table 1: Formulation of tandoori spice mix

S. No.	Name of the ingredient	Quantity (gm)
1	Coriander powder	20
2	Cumin	10
3	Garlic powder	10
4	Ginger powder	10
5	Cloves	10
6	Ground mace	10
7	Fenugreek	10
8	Cinnamon	10
9	Black pepper	5
10	Cardamom	5

Table 2: Formulation of Marination: Tandoori drumsticks

S. No	Product	Quantity
1	Raw chicken drumsticks (kg)	1.0 kg
2	Lemon juice(ml)	10 ml
3	Tandoori spice mix(kg)	150 gm

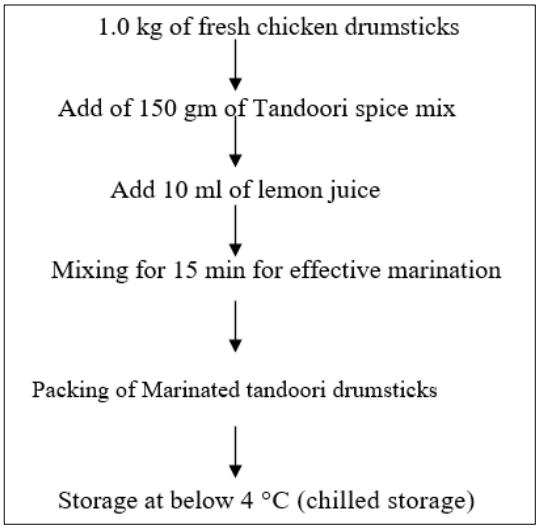

Fig 1: Processing Flow chart

2.2 Storage life study
Storage life study was conducted for raw chicken drumsticks and marinated tandoori chicken drumsticks samples. Overall shelf life study was carried out for six days stored at below 4 ºC. On each test day, three samples of control and marinated chicken drumsticks were assessed in triplicates for various quality parameters of chicken meat.

2.3 Physico-chemical parameters
In Physico-chemical parameters, pH and Drip loss were assessed for both control and tandoori drumsticks as per standard procedure.

2.4 Microbiological analysis
2.4.1 Total viable count
Total viable count (TVC) of each sample was estimated by pour plate technique described by Swanson *et al.* (2001). From the selected 10 fold dilutions of each sample, one ml of the inoculum was transferred onto duplicate petri-dishes of uniform size. To each of the inoculated plates, about 15-20 ml sterile molten standard plate count agar (SPCA) (Hi-media) maintained at 45 °C was poured. The inoculum was mixed with the medium by gentle rotatory movement of the inoculated petri-dishes in clockwise, anticlockwise, forward and backward manner. The inoculated plates were allowed to solidify at room temperature and were then incubated at 37 °C for 24 h aerobically. At the end of incubation period, petri-dishes with a bacterial count between 30 and 300 colonies were selected and count of each petri-dish was taken with the help of a colony counter. The number of colony forming units per ml of the carcass rinse was calculated by multiplying the' mean colony count of duplicate plates with dilution factor and the count per ml of the carcass rinse was expressed as log cfu/ml.

2.4.2 Coliforms count
Coliforms count (CC) was estimated according to the procedure described by Nordic Committee on food analysis (1973). From the selected dilution, 0.1 ml of the inoculum was inoculated onto duplicate plates of violet red bile agar (VRBA) (Himedia) and the inoculum was uniformly distributed on the medium with a sterile "L" shaped glass rod and the plates were incubated at 37 °C for 24 h. At the end of incubation, purplish red colonies with a diameter of atleast 0.5 mm, surrounded by a reddish zone of precipitate were counted as coliforms. The number of organisms per ml of the sample was estimated by applying the dilution factor on the mean count of duplicate plates and the count per ml of carcass rinse expressed as log cfu/ml.

2.5 Sensory evaluation: The hedonic rating test 9 point scale is used to measure the sensory evaluation and consumer acceptability of chicken drumsticks.

3. Results and Discussion
3.1 Physico-chemical parameters
The Physico-chemical parameters (pH & Drip loss) of control and marinated tandoori chicken drumsticks samples are increased during the chilled storage for six days. Based on results, there is a slight spoilage changes observed in control sample when compared to tandoori drumsticks.

Table 3: Physico-chemical parameters of samples

Days	Control sample		Tandoori chicken drumsticks	
	Ph	Drip loss (%)	pH	Drip loss (%)
1st	5.8	0.33	5.7	0.11
2nd	5.9	0.65	5.9	0.23
3rd	5.9	0.88	6.0	0.64
4th	6.0	1.89	6.0	0.98
5th	6.2	1.99	6.2	1.44
6th	6.6	3.66	6.2	2.64

3.2 Microbiological parameters
The microbiological parameters of raw chicken drumsticks and marinated tandoori chicken drumsticks samples increased during the chilled storage of below 4 ºC. As per the results there was not much increase in the microbial load of Total viable count and Coliform count in raw chilled drumsticks sample from 1st day to 4th day. Where as in tandoori chicken drumsticks samples, the spoilage observed after 6th day of chilled storage of below 4 ºC. This similar results are explained by Stem, N.J., Lyon *et al.* 1995.

Table 4: Microbiological parameters of samples

Days	Control		Tandoori drumsticks	
	Total viable count (cfu/gm)	Coliforms (cfu/gm)	Total viable count (cfu/gm)	Coliforms (cfu/gm)
1st	33×103	16	14×103	12
2nd	36×103	17	19×103	16
3rd	37×103	20	29×103	19
4th	40×103	22	34×103	19
5th	46×103	24	36×103	20
6th	58×103	28	38×103	23

3.3 Sensory parameters

The sensory evaluation of control and tandoori chicken drumsticks samples score decreased during the chilled storage at below 4^0C temperature. From 1st day to 6th day, the tandoori chicken drumsticks samples got the highest rating compared with the raw chicken drumsticks sample.

Table 5: Sensory parameters of samples

Days	Appearance		Color		Odour		Sliminess		Overall Acceptability	
	C	T	C	T	C	T	C	T	C	T
1st	10	10	10	10	10	10	10	10	10	10
2nd	9	10	10	10	9	10	9	9	9	9
3rd	9	9	9	9	9	9	9	8	7	9
4th	7	7	7	7	6	7	6	7	6	8
5th	5	6	4	7	3	6	3	5	2	7
6th	2	4	3	5	1	5	1	3	1	7

C- Control sample: T- Tandoori drumsticks

4. Conclusion

Present research was conducted to know the Storage life of marinated chicken tandoori drumsticks when compared with control raw chicken drumsticks. Results proved that the all the quality parameters of marinated chicken tandoori drumsticks showed a better results compared to raw chilled chicken drumsticks. Hence the raw chicken drumsticks has the storage life of three to four days at chilled storage but the raw chicken marinated with tandoori spice mix (tandoori drumsticks) is further increased the storage life from four days to six to seven days at chilled storage of below 4 ºC.

5. References

1. Alvarado C, Mckee S. Marination to improve functional properties and safety of poultry meat, J Appl. Poult. Res. 2007;16:113-120.
2. Mothershaw AS, Gaffer T, Kadim I, Guizani N, Al-Amri I, Mahgoub O, *et al*. Quality characteristics of broiler chicken meat on salt at different temperatures. International Journal of Food Properties. 2009;12(3):681-690.
3. Nordic Committee on Food Analysis. Determination of number of coliform bacteria in foods (44) UDC. 576.851.48; c1973.
4. Okolocha EC, Ellerbroek L. The influence of acid and alkaline treatments on pathogens and shelf life of poultry meat. Food Control. 2005;16:217-225.
5. Rajani K, Kondaiah N, Anjaneyulu ASR, Thomas R. Evaluation of quality of chicken emulsions stored refrigerated (40C) for chicken patties. International J Food Sci. Technol. 2007;42(7):842-851.
6. Stem NJ, Lyon CE, Musgrove MT. Bacterial quality of broilers and alternative processing procedures. J Appl. Poult. Res. 1995;4:164-169.
7. Swanson KMJ, Petran RL, Hanlin JH. Culture Methods for Enumeration of Microorganisms. Compendium of Methods for the Microbiological Examination of foods, (eds. Downes, F.P. and Ito, K.). Fourth edition. American Public Health Association, Washington; c2001. p. 53-67