

# Sun Drying of Anchoviella on Racks

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Anchoveilla was dried on rack, cement floor and black surface. The fish was kept over these surfaces on trays of 1 x 0.5 m size. Though the initial drying was higher on the top deck of the rack, all the samples attained almost uniform moisture by 9 h drying. The dried fish had good colour and appearance. During storage, the white colour faded to yellow and then to brown. All the samples became slightly rancid by 22 weeks and highly rancid by 44 weeks.

The annual landing of anchoviella during 1988 was 75,947 tonnes (Anon, 1988). Majority of the catch is converted into dried products and exported to Sri Lanka. The export of dried anchoveilla is considerably reduced during recent years due to poor quality. The dried anchoviella is prepared by spreading fresh fish on sandy beaches for one to two days (Kandoran & Prabhu, 1988). The quality of this product is not satisfactory due to insect infestation, yellow discolouration, off odour, high sand content, breakage of head portion, belly bursting and disintegration. Because of these quality problems dried anchoviella has no demand from any sophisticated market. So it is necessary to improve the quality by adopting suitable methods of handling and processing. This will enhance the acceptability and price of the product. The present work is carried out to study the effect of drying the fish on decks and the results are reported in this paper.

## Materials and Methods

The experiments were conducted during 1987-89. Fresh anchoviella (*Stolephorus* spp.) collected from the landing centre at Mandapam, Tamil Nadu, was washed in clean sea water or 5% brine, drained and 800 g of fish was spread uniformly on each plastic wire mesh tray with wooden frame of size 1 x 0.5 m. These trays were kept on each

deck of a four deck drying system. The drying rack was made by making rack of 1 m width, the first deck was 1 m high from the floor and the distance between each deck arranged one over the other was 0.5 m. (Fig. 1) Also washed anchovies

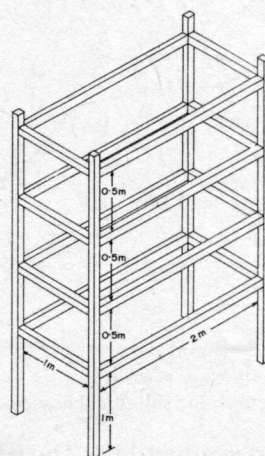


Fig. 1 Multi-deck drying rack

spread on trays were kept on cement floor and on black surface. The initial weight and the loss of weight at different intervals on each surface were noted separately. After proper drying the samples were packed in polythene bags and kept at ambient temperature ( $28 \pm 2^\circ\text{C}$ ) for storage studies. The samples were analysed periodically for chemical and organoleptic characteristics. Total volatile base nitrogen (TVBN) was

Table 1. *Percentage loss in weight of fish during drying in trays on rack, cement floor and black surface*

Time, hours	Tray on racks				Tray on cement floor	Tray on black surface
	Deck 1 (bottom)	Deck 2	Deck 3	Deck 4 (top)		
2	20.0	23.5	24.0	27.5	15.0	13.5
4	42.0	42.5	43.5	52.5	44.5	43.0
5	49.5	52.5	54.0	63.5	59.5	59.5
7	63.0	63.0	65.0	72.0	72.0	71.0
8	72.5	73.5	73.5	73.0	74.5	75.0

determined by the microdiffusion method of Conway (1962) using trichloroacetic acid extracts of the fish. The organoleptic qualities such as colour and appearance and overall acceptability were evaluated by a trained taste panel consisting of 8 members.

### Results and Discussion

The percentage loss of weight of fish on different decks and surfaces during drying are given in Table 1. Initially the rate of drying was lowest in fish kept on cement floor and black surface. Among the four decks the bottom showed the lowest drying rate and the highest rate was shown in the fish kept on the top deck. This might be due to the combined effect of sunlight and wind. The effect of wind was lowest on the fish kept on the floor and black surface. After 4 h drying all the samples except that on the top deck showed almost same weight loss (42-44.5%). But by 7 h drying the samples kept on the floor, black surface and top deck showed 71-72% weight loss while in other samples it was 63-65%. The drying was almost complete in all samples by 9 h and the weight loss was 72.5-75.0%. On further drying no significant reduction in weight was noticed.

While keeping open the semidried fish at night, the samples with a weight loss of 65-66% did not show any change in weight while sample with 63% weight loss showed 1.4% weight loss and samples with 67.5 and

70% weight loss absorbed some moisture and reached the final weight loss of 64 and 64.4% respectively. This indicated that gain or loss of moisture took place depending on the moisture content of the semidried samples and reached an equilibrium.

Table 2 shows the organoleptic characteristics of the samples dried on rack during storage at ambient temperature ( $28 \pm 2^\circ\text{C}$ ). All the samples kept in the three bottom decks had white colour initially while the sample from top deck had pale yellow colour. The change in colour of the samples from top deck might be the effect of direct exposure to sunlight. However the overall organoleptic quality was found very good in all the samples. The characteristic colour and organoleptic qualities were retained by 4 weeks storage in all the samples. The colour changed from white to pale yellow with slight browning at the belly portion in samples from the first 3 decks while the colour of the sample from the top deck became yellow with browning at the belly portion by 14 weeks storage. The intensity of the colour increased on further storage and all the samples became brown by 44 weeks. The development of organoleptic rancidity was noticed in all the samples by 22 weeks storage irrespective of the colour. The intensity increased further and became highly rancid by 44 weeks.

Table 3 shows the changes in TVBN of

Table 2. *The changes in organoleptic characteristics of dried anchoviella during storage at ambient temperature (28±2°C)*

Storage period, weeks	Dried samples from			
	Deck 1 (bottom)	Deck 2	Deck 3	Deck 4 (top)
4	White, very good	White, very good	White, very good	White, very good
14	Pale yellow, slight browning at the belly, good	Pale yellow, slight browning at belly, good	Pale yellow, slight browning at the belly, good	yellow, slight browning at the belly, good
22	Yellow, brown at belly, slight bitter taste	Yellow, brown at belly, slight bitter taste	Yellow, brown at belly, slight bitter taste	Yellow, brown at belly, slight bitter taste
36	Brown, rancid	Brown, rancid	Brown, rancid	Brown, rancid
44	Brown, highly rancid	Brown, highly rancid	Brown, highly rancid	Brown, highly rancid

dried anchoviella during storage at ambient temperature. The TVBN values did not indicate any pattern but it increased in all samples during early stages of storage.

Table 3. *Changes in TVBN (mg%) of dried anchoviella during storage at ambient temperature (28±2°C)*

Storage period, weeks	Deck 1 (bottom)	Deck 2	Deck 3	Deck 4 (top)
4	56	70	35	42
14	91	98	84	91
22	105	98	105	105
36	98	98	98	93
44	105	91	70	70

The drying of samples in cement floor, black surface and rack are found equally effective as far as drying rate is concerned. The quality of the products dried in rack is very good. Proper installation of racks can save space without sacrificing drying rate to obtain sand free dried anchoviella.

#### References

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