STORAGE OF FIG FRUITS – A REVIEW

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ABSTRACT

Fig is one of the perishable fruits. Its shelf life is hardly a day or two after harvesting. Many attempts have been made for extension of postharvest life of fig fruits viz., low temperature storage, use of dry ice, waxing, controlled atmosphere storage, precooling, fumigation etc. A brief review of literature pertaining to these aspects is presented here.

Fig (*Ficus carica* L.) belongs to the family Moraceae. The fig is a native of Southern Arabia. The main fig growing countries are Italy, Spain, Turkey, Greece, Portugal and Algeria. It is extensively grown in the states of California (USA) and Afghanistan. The total area under fig cultivation in India is about 1000 hectares of which 400 hectares is in Maharashtra (Singhal, 1998) which further increased to 883 hectares with the production of 2650 metric tonnes (Anonymous, 2002). In India, its commercial production is limited to a few centres in Maharashtra and South India. In Maharashtra, it is cultivated on commercial scale in adjoining areas of Pune and Aurangabad. In 1992-93, India exported 1.50 tonnes figs to United Arab Emirates (Singhal, 1998) where the production of dried figs during seventies was 118 thousand tons (Kendal, 1971). Fig is perishable in nature and there are many more occasions for it to get spoiled till the fruit reaches consumers table. It is estimated that the total losses due to spoilage may be ranging from 30-40 per cent (Salunkhe and Desai, 1984). One of the causes for its losses are unhygienic storage conditions. Therefore, information available on various methods of storage of fig has been summarized hereunder.

Storage of fig fruits

Several physico-chemical changes occur during storage of fruits. The prolonged and improper storage of fig fruits result in the loss of acceptability and other organoleptic properties. However, limited information is available on the effect of packaging, treatments and storage temperature on the chemical composition and organoleptic properties of fig fruits. Brook et al. (1936) recommended 1000 lb of dry ice per cartload as an aid in controlled decay as in generally used for cherries. Condit (1947) reported that coating figs with paraffin or mineral oil prolonged their life.

Claypool and Ozbek (1952) found that preliminary treatment of figs with 100 per cent CO₂ was significantly effective in controlling the post harvest decay. These workers suggested that figs should be stored in a CO₂ enriched atmosphere to extend their market life. Mc Dowell and Eton (1971) found that 2.2-3.3°C temperature as the optimum temperature for storage and recommended air shipment for transport. For maximum life, the fruits should be pre-cooled immediately after harvest to near 0°C and placed at a temperature of −0.5°C to 0°C and relative humidity of 85 to 90 per cent.

Mohammad et al. (1989) noted that the radiation treatment in combination with low temperature checked infestation of dried figs by *Corcyra cephalonica* and *Cadra cautella* and also reported that the storage of dried figs in coloured polyethylene protected the fruit colour and ascorbic acid during one year storage.

Brane and Railly (1956) found that fumigation with methyl bromide had been found to be the most practical method of
controlling insect infestation. During storage, figs form surface of subsurface granulation which is referred as ‘sugaring’. Occurrence of sugaring gives a very undesirable appearance to dry fruit because it resembles the growth of microbial or fungal colonies. Sugaring also affects the quality adversely by imparting a grainy or sandy texture. The sugaring consists primarily of glucose monohydrate in a matrix of fructose. Figs held at 35°F and 50°F showed extensive sugaring in few months and those held at 70°F did not sugar. This problem can be minimized by the marketing of high moisture dried figs (Miller and Phaff, 1962).

Nury et al. (1960) reported the rate of darkening of dried fig as measure of O.D. of 50 % ethanol extractions of calimyrna figs and it was found that rate of O.D. increased as temperature increased. Miller and Phaff (1962) found that figs after Sun drying had yeast counts of about 3.5 x 10⁸ and as soon as water activity raised during storage, the yeast proliferated and spoiled the fig.

Gouda et al. (1975) found SO₂ content of 2200 ppm for dried figs with a loss of 55 per cent SO₂ after 8 months storage in samples of i. Adriatic, ii. Black mission, iii. Brigiota Biance, iv. Brigiotta Niro, v. Brown Turkey, vi. Condaria, vii. Kadota and viii. Sultani fig varieties. Woodroof (1975) studied the storage of dried figs. Figs may be held for a year at 32-40°F at 50 to 60 % R.H. A temperature of 55°F or lower prevents darkening for more than 5 months and low humidity controls sugaring.

Changes in chemical composition of fruits during storage

Thonte and Patil (1988) found that the total sugar content of dried fig fruit decreased from 34.00 to 27.17 per cent during storage for one year. A significant variation in reducing sugar content of fig fruits has been reported during storage. The content of reducing sugars in fig increased with progress of storage period of fruits. The rate of increase was higher in control fruits (Jawanda et al., 1980; Banik et al., 1988).

Thonte and Patil (1988) found that non-reducing sugar content in dried fig decreased from 3.14 to 1.50 per cent during storage.

Organoleptic properties

Thonte and Patil (1988) reported that the organoleptic evaluation of fig fruits treated with different treatments indicated that fruits in dry sugar and subjected to oven treatment followed by pricked fruits and non-pricked dipped in sugar solution and placed in the oven gave quality dry fig fruits which were nearly comparable to excellent grade dry fruits from market. Gouda et al. (1975) revealed that var. Brown Turkey, Black mission and Sultani figs were of substandard grade, Brigiota Blance-standard, Brigiota Niro and Kadota were of medium and candearis and Adriatic figs were of fancy grade.

REFERENCES

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