

## **Isolation of *Staphylococcus aureus* from Milk Products Sold at Sweet-meat Shops of Hyderabad**

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**Abstract:** The study was designed with the aim to isolate *Staphylococcus aureus* from traditionally made milk based sweet products i.e Gulabjaman, Rasgulla, Khoa, Mawa and Rabri sold at sweet meat shops of Hyderabad. The results of the present investigation revealed that out of 150 samples, 35 samples (23.33%) were found contaminated with *Staphylococcus aureus*. The highest rate of contamination was recorded from the samples of Rabri that is 9 samples (30%), followed by Khoa 8 (26.67%), Mawa 7 (23.33%), Gulabjaman 6 (20%) and Rasgulla 5 (16.67%).

**Key words:** *Staphylococcus aureus*, milk products, Sweet-meat shops

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### **Introduction**

Milk and indigenous sweet based dairy products like khoa, Mawa, Gulabjaman, Rasgulla and Rabri are widely manufactured and consumed by the peoples of Indo-Pakistan. These products are highly susceptible to variety of microorganisms because of their high nutritive value and complex chemical composition. The biological changes produced by these organisms are desirable or undesirable. They may have useful function in the preparation of fermented milk products like Yoghurt and Cheese or may have undesirable effects and produce changes in the odour, colour, taste, texture or appearance of the food, besides this most of these bacteria produce toxins and cause food poisoning frequently.

Contamination of these products with pathogenic bacteria can serve as a source of spread of certain harmful human bacterial diseases like Tuberculosis, Gastroenteritis Brucellosis, Salmonellosis and Staphylococcal food poisoning, (Jay, 1978 and George, 1981). Besides these, enterotoxin producing *Staphylococcus aureus* is most dangerous and harmful for the human health. About 50% strains of these organisms are able to produce enterotoxin associated with food poisoning (Payne and Wood, 1974). The incidence of Staphylococcal food poisoning due to the consumption of dairy products is not un-common in our country (Masud *et al.*, 1989).

The most common food that may cause food poisoning are dairy products, including meat with ideal temperature and high contamination levels (Bijker and Vincentic, 1977). There is evidence that *S. aureus* was isolated from Khoa samples (Masud *et al.*, 1988 and Teufal *et al.*, 1992) Rasmalai (Grewal and Tiwari, 1990) and Moroccan traditional milk product samples contaminated with enterotoxin C producing *S. aureus* strain (Hamama and Tatini, 1991)

The most important source of contamination of *S. aureus* is probably the human. The contaminants reached the products either during cooling or handling after cooking, (Ghosh and Laximaniarayan, 1976). Keeping in view the above facts the present study was designed to isolate *S. aureus* from milk based products sold at the sweet meat shop of Hyderabad.

## Materials and Methods

### Collection of samples

A total of 150 samples of indigenous milk based sweet products i.e. Mawa, Rabri, Khoa, Gulabjaman and Rasgulla were collected from different localities of Hyderabad. 30 samples of each product were randomly collected in the sterilized screw capped bottles and brought under refrigeration to the Dairy Technology Laboratory Faculty of Animal Husbandry and Veterinary Sciences, Sindh Agriculture University, Tandojam, for isolation and identification of *Staphylococcus aureus*.

### Isolation and identification of the *Staphylococcus aureus*

For the isolation and identification of *Staphylococcus aureus*, each sample was cultured on selective medium i.e. *Staphylococcus* medium No.110 (Difco, 1962) and incubated at 37°C for 24-48 h. The colonies which showed different morphological characteristics were identified on the basis of their cultural, morphological, staining and bio-chemical characteristics, following the method of Cruickshank (1970).

### Coagulase test

All the positive samples were subjected to coagulase test for the confirmation of *S.aureus* as described by Monica (1991).

## Results and Discussion

According to these results highest *Staphylococcus aureus* contamination was recorded from the samples of Rabri which showed 9 out of 30 samples positives (30%), followed by 8 out of 30 Khoa samples (26.67%), 7 out of 30 Mawa samples (23.33%), 6 out of 30 Gulabjaman samples (20%) and in case of Rasgulla 5 out of 30 samples (16.67%) were found positive (Table 1).

The literature reviewed in the present study provided evidence that *Staphylococcus aureus* is frequently occurring organisms in the indigenous sweet based milk products such as Khoa, Mawa, Rabri, Gulabjaman and Rasgulla. These milk based sweet products are commonly manufactured and consumed in Indo-Pakistan. The method of their manufacturing, handling and sale is entirely based on tradition. No hygienic measures are adopted in the preparation, handling and storage.

Table 1: *Staphylococcus aureus* contamination of sweet meet products

Product/ sample	No. of samples collected	No. of positive samples	Percentage of positive samples
Gulabjamun	30	6	20
Khoa	30	8	26.67
Mawa	30	7	23.33
Rasgulla	30	5	16.67
Rabri	30	9	30
Total	150	35	23.33

The results of the present study is also supported by Venkatasubbaiah and Dwaraknath (1985), Varadaraj and Nambudripad (1983), Garg and Usha (1984), Kahlon and Grover (1984), Raimundo and Robbs (1988), Masud *et al.* (1988, 1989), Gilmour and Marvey (1990), Grewal and Tiwari, (1990), Hamama and Tatini (1991), Kariuki (1991), Ombui *et al.* (1992) and Teufel *et al.* (1992).

The findings of the present study revealed that the problem of *S. aureus* contamination of milk products available in the sweet meat shops of Hyderabad exists. Further more, the unhygienic conditions in which these products are manufactured and water used for washing of utensils have accelerated the bacterial contamination of milk and milk products (Johnson, 1961).

According to the results of present investigation, it was concluded that milk based sweet meat products available in the market were contaminated with *S. aureus*, posing a high risk of food poisoning. Thus more hygienic preventive measures are required to reduce the bacterial contamination, so as to increase the wholesomeness of these milk based sweet meat products.

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