I N T R O D U C T I O N

INTRODUCTION

During the last few decades, the exposure of foods including milk and dairy products to ionizing radiation as being bactericidal or bacteriostatic, fungicidal or fungistatic as a mean for preservation, was considered a typical theoritical procedure. This was due to the fact that the irradiated food was not legalized and was not accepted by the consumer.

To-day the advancement in technology towards developing newer and simpler techniques with the use of low-cost equipments, has rendered the practical application of gamma-irradiation conceivable. The commercial potentialities of the method when used as a microbial reducer in foods, in general, as well as in milk and dairy products are promissing. However, it is reported that there was no toxicological hazards caused by irradiating any food up to a dose 1 Mrad and therefore, doses applied safely should not exceed that level (I.A.E.A., 1980).

Work undertaken in this country particularly that connected to milk and dairy products is extremely

limited (Naguib et al., 1973, Ismail et al., 1975 and Khorshid et al., 1975). However, extensive literature in this field has been reported abroad covering the effect of gamma irradiation when used in various doses on the chemical, physical, microbiological and nutritional properties of milk (Hsu et al., 1972 a and b; Patel and Adhikari, 1973).

Milk proteins and fat may provide certain degree of protection to microorganisms against gamma radiation. So, it was of great interest to study the effect of gamma radiation on different groups of microorganisms naturally contaminating Egyptian cows and buffaloes milk.

The chemical and physical properties of milk are affected by different processes like high heat treatment and ion exchange treatment. Recently it is also interesting to study the changes in milk properties caused by irradiation, Since it is proposed as a method of food preservation. The chemical and physical alteration in milk due to gamma radiation treatment will be reflected on the organoleptic characteristics of milk. So, it was a must to study the effect of gamma radiation on

the organoleptic characteristics of Egyptian cows' and buffaloes' milk.

The temperature of milk during radiation may affect the efficiency of radiation on the keeping quality of milk; So this item was also investigated.

By the application of gamma radiation to starter cultures, potent mutants could be obtained and used successfully in the dairy fermentations.

So, the present investigation was designed to study the following main points:-

1. **Effect of gamma radiation on titratable acidity, pH and some microorganisms.**

2. **Effect of milk temperature during irradiation on total bacterial count and keeping quality.**

3. **Organoleptic evaluation of cows' and buffaloes' milk as affected by different doses of gamma radiation.**

4. Production of mutants usually used in dairy industry.