CONCLUSION

Jam and jelly products are intermediate moisture foods are prepared from fresh fruits are consumed as widely in the world by people of all age groups and the demand is going up by year and year due to its taste and health benefits. Jam and jellies are sugar containing food products which are possible to getting microbial spoilage immediately after preparation. The shelf life of traditional jam and jelly products have minimum storage period without the use of any preservatives.

Moulds and bacteria are the major sources of spoilage of fruit products. Benzoic acid in the form of its sodium salts is used widely for the preservation of jams and jellies. Microbes are developing resistance to these types of chemical preservatives. In addition, chemical preservatives in food products gives undesirable changes in flavor, colour and nutrients of food products and it is harmful when consumed for long time. Food irradiation is one of the most important technologies that contribute to improve the safety of food. Irradiation process improves the shelf life and nutritional quality of fruits, vegetables and their products by destructing the microflora. Irradiation has the additional benefit of reducing the amount of additives and preservatives needed to maintain safety and quality.

In the present study, mixed fruit jam and jelly products were freshly prepared with devoid of chemical preservatives and exposed to electron beam radiation at doses of 2.5, 5.0, 7.5 and 10 kGy and stored at room temperature. After irradiation the proximate, antioxidant, minerals, sensorial and microbial properties were analyzed in irradiated and control samples at monthly intervals upto twelve months of storage. The effect of electron beam irradiation on jam and jelly products were observed as relatively similar because of constituents of the products are same but only varied with the method of preparation and concentrations used. Electron beam irradiation did not
cause any significant changes in the proximate, antioxidant, minerals and sensorial properties of jam and jelly products. Bacterial and fungal count was lowered in all doses of irradiated jam, jelly products and it was found within the permissible limit as per the microbial standards upto the end of storage. The electron beam irradiation is considered as effective to improve the microbial quality of jam and jelly products. All the samples of irradiated jam and jelly products were keeping their quality as good upto 12 months of storage. From the study, 5 kGy was found as the optimum dose for preserving both jam and jelly products by electron beam irradiation.

The food experts and international health and safety authorities and Joint FAO/IAEA/WHO Expert Committee on the wholesomeness of irradiated foods (JECFI) were reported that irradiated upto 10 kGy are considered as safe, no toxicological hazards are found and no special nutritional or microbiological problems are expected in the irradiated food.

This study concludes that electron beam irradiation technology is found to be suitable for preservation of jam and jelly products and considered as suitable alternative for chemical treatments.