

Effect of gamma radiation on some physico-chemical characteristics of plantains

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Editorial

The rate of postharvest losses is very high in plantains due to its climacteric nature. Suggested ways to increase the shelf-life will have to take into account the stage of maturation and how the intervention impacts the physico-chemical characteristics of the plantain. This present study sought to determine the effect gamma irradiation on some physico-chemical attributes of plantains at different stages of maturation. The stage of ripening, more than the irradiation dose, appears to determine the total soluble solids (TSS) contents of the irradiated plantains. Plantains had a higher TSS at Stage 1 compared to Stage 4. Higher irradiation doses result in higher soluble solids content as compared to the un-irradiated plantains. The starch content reduced as the plantains moved from one stage to the next. However, this reduction was aided by increasing radiation doses. The sugar content of the plantains in the present study increased as the plantains moved from one stage to the next. This increase was higher as the irradiation dose applied increased. The effect of gamma irradiation on the starch and sugar content at the different stages can potentially reduce the shelf-life of the irradiated plantains, especially at the higher doses.

The development of fruits is the final phase of sexual reproduction in angiosperms typically proceeding and signaled by successful pollination. Ripening is unique to fruits and is initiated after seed maturation to add flavour and visual appeal for both humans and animals.

The ripening process of all the 300-500 different cultivars of *Musa* spp can be divided into three distinct phases. These phases are the pre-climacteric or 'green life' stage, the climacteric and ripening stage and finally eat-ripe and senescence stage. During the ripening

process, members of the *Musa* spp banana undergo different physiological, biochemical, and organoleptic changes that lead to a soft and edible ripe fruit.

Though physiological and chemical changes in fresh produce, especially climacteric fruits, cannot be stopped, they can be slowed down within certain limits if factors responsible for such deterioration can be minimized. This results in increased shelf life and marketing period of fresh fruits and maintains their quality during postharvest handling.

It has been reported that gamma irradiation treatment up to 1.0kGy allows many tropical fruits to ripen normally or have slightly delayed ripening. An understanding of the effect of irradiation on the chemical composition of plantains at various stages of maturation is therefore imperative to determine the best time to apply the radiation. This present study was to determine the effect gamma irradiation on some physico-chemical attributes of plantains at different stages of maturation.

Irradiation can extend the green life of plantains. However, the stage of maturation is more critical to extend the green life by not causing a breakdown of the more complex starches which may hasten ripening. It is recommended that irradiation of plantains to extend the shelf-life should be carried out when the plantains are at Stage 1 and the dose applied should not exceed 400 Gy.

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