

Abstract:

Irradiation is rapidly becoming the preferred method of quarantine treatment against fruit flies for citrus fruit and improving shelf life of the fruit during storage. Citrus fruit contain several biologically active functional components that are known to prevent chronic diseases such as cancer and cardiovascular diseases. The preventative activity has been associated with polyphenol content in citrus fruit. 'RioRed' grapefruit (*Citrus paradisi*) were harvested in the middle of March, 2001 and exposed to gamma irradiation from a Cs137 source at levels recommended to control fruit flies (0,150, 300 Gy) and then stored at 10 °C and 90-95% relative humidity (RH) for 36 days, followed by an additional 20 days at 20 °C to simulate marketing conditions. Stored fruit treated with 300 Gy had less water loss compared to other treatments. Irradiation treatments had no consistent effect on total soluble solids (TSS) and titratable acidity. Stem end breakdown and peel pitting were slightly higher in fruits treated with 300 Gy at the end of the storage period. Irradiated fruits had higher total phenolic content than controls during storage. Fruits irradiated with 300 Gy had higher flavanone content (naringin, narirutin and total flavanones) compared with control, immediately after irradiation and at the end of the storage. Organoleptic characters were more affected by storage than by irradiation treatments. Sensory panel preferred fruits exposed to 300Gy irradiation after the storage compared to other treatments. Irradiation may be useful in retaining the beneficial flavanones that have been shown to have preventative effect on degenerative diseases in addition to insect control.