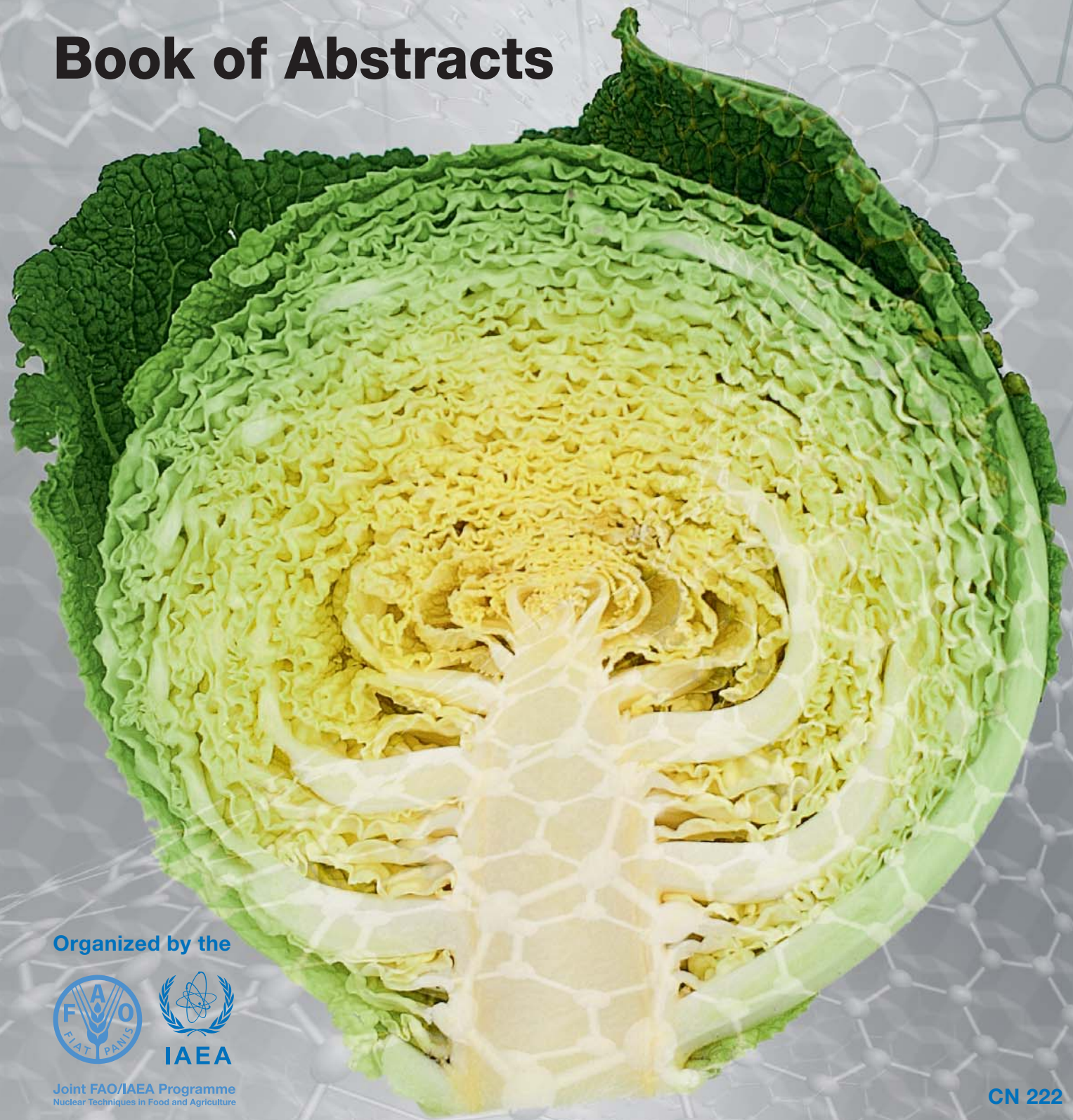
International Symposium on Food Safety and Quality: Applications of Nuclear and Related Techniques

10–13 November 2014, Vienna, Austria

Book of Abstracts



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Impact of gamma irradiation on hydrophilic and lipophilic compounds of Cochlospermum angolensis Welw. (borututu)

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Borututu (Cochlospermum angolensis Welw.) is a widespread tree in Angola well-known for its beneficial effects on the treatment of liver diseases and on the prophylaxis of malaria [2,3]. During the processing and storage, it can be easily exposed to contamination that may be responsible for microbial deterioration or insect infestation, compromising its quality, shelf life, and efficiency [4].
Herein, we investigated the effect of gamma irradiation, one of the most promising decontamination methods for plant materials, at different doses (1 and 10 kGy) on borututu dried barks hydrophilic (free sugars and organic acids) and lipophilic (tocopherols and fatty acids) compounds analyzed by chromatographic methods.
In general, 1 kGy was not enough to preserve sugars content, where it was verified a decrease in fructose, glucose, sucrose, and trehalose; but with 10 kGy, the sample showed the highest amount of these individual sugars and the highest total sugars content (8.63 g/100 g). Regarding to organic acids, it was possible to verify that the irradiation did not significantly affect these compounds in the assessed samples, which showed the presence of oxalic, malic, shikimic, citric and fumaric acids in similar amounts, with higher oxalic, malic and citric acids content. Twenty-one different fatty acids were quantified in all the samples with prevalence of saturated fatty acids (SFA) and considerable percentages of polyunsaturated fatty acids (PUFA). Among the three samples, the sample irradiated at 1 kGy gave slightly lower percentage of PUFA (32.75%) and SFA (43.32%), while control and sample irradiated at 10 kGy revealed quite similar amounts. No significant differences between the MUFA percentages of the studied samples were observed. The four vitamers of tocopherols were found in all the samples, with the prevalence of β-tocopherol; the highest total tocopherols content was observed in the irradiated samples (both with 1 kGy and 10 kGy with 331.97 mg/100 g and 336.72 mg/100 g, respectively). With the exception of δ-tocopherol, the amount of the different isoforms was generally higher in the irradiated samples. Thus, irradiation can be signed out as a suitable technique for preservation of borututu dried barks bioactive compounds.

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