

超微弱发光分析法在辐照糖类食品中鉴别检测的应用

傅俊杰 包劲松 张世民

(浙江大学原子核农业科学研究所 杭州 310029)

糖是大多数食品的重要组成部分^[1]。本工作应用超微弱发光分析技术^[2],研究三种糖分在辐照前后变化过程,以建立一种无需对照样品的辐照食品鉴别检测新方法。研究表明,食品经不同剂量⁶⁰Co γ 射线辐照处理后,在干燥状态下,辐照后葡萄糖和蔗糖样品的超微弱发光强度变化不大。但是,在测量过程中瞬间加水溶液后,样品的超微弱发光强度会产生显著变化,其发光峰所对应的光子数与辐照剂量密切相关^[3]。根据这一特有的变化规律,检测糖辐照后的化学发光效应可以有效地检测经过辐照后的含糖食品,此法不需对照样品,能有效地区分辐照和未辐照的食品,为检测辐照食品提供了一种新的方法。

关键词 超微弱发光,糖,检测,辐照食品

中图分类号 Q691.6, Q682, Q533^{+.1}

参考文献

- 1 刘程,江小梅.当代新型食品.北京:北京工业大学出版社,1998.230-255
LIU Cheng, JIANG Xiaomei. Up-date food-processing. Beijing: Publishing Company of Beijing University of Technology, 1998. 230-255
- 2 Mniyahara M, Saito A, Ito H, *et al.* Radia Phys Chem, 2002, **63**(6): 451-454
- 3 秦志荣.食品工业,2000,(2):39-41
QIN Zhirong, Foodstuff Industry, 2000, (2): 39-41

Application of ultraweak luminescence technique in detection of irradiated food containing sugars

FU Junjie BAO Jinsong ZHANG Shimin

(Institute of Nuclear Agricultural Sciences, Zhejiang University, Hangzhou, 310029)

Sugars are major constituents in many food systems. In this study, we tried to establish a rapid identification method to detect irradiated food which contained sugars by analyzing ultraweak luminescence of the food. The results indicated that the ultraweak luminescence behavior of glucose and sucrose changed greatly after gamma ray irradiation. Under dry condition, there were little changes in ultra luminescence intensities with the irradiated samples of glucose and sucrose, however, they did show marked changes in their ultra luminescence intensities when water was added during the measurement. It seemed that photon numbers of luminescence peak could be correlated to the dose delivered to the samples. The difference in the luminescence behavior of glucose and sucrose may provide an effective way to differentiate irradiated food.

KEYWORDS Ultraweak luminescence, Sugar, Detection, Irradiated food

CLC Q691.6, Q682, Q533^{+.1}

浙江省测试基金(W40506)资助

第一作者:傅俊杰,男,1954年7月出生,1980年毕业于中国科技大学,辐射化学专业,现为浙江大学核农所教师,主要从事农副产品辐照鉴别检测研究