



"Radura" symbol for irradiated food labeling<sup>[1]</sup>

## ABC TESTING – December 3, 2014

### Irradiation Testing at ABC Testing

Irradiating food products has been used extensively for the past 60 years to increase the shelf life, to slow down the ripening process of fruits and vegetables, and to kill bacteria and viruses. In 2010, the United States alone irradiated a total of 103,000 tons of food products for preservation, in which spices and herbs made up the majority of the food products irradiated at a staggering 77.7%. In addition, a sharp increase in usage was observed from 4,000 tons in 2005 to 15,000 tons in 2010 for the purpose of disinfestation of grains and fruits.<sup>[2]</sup> With the continual usage of irradiation to inhibit sprouting, disinfect, and disinfest consumable products, the effects of these ionizing radiation on medicinal herbs and food products are a growing health concern.

In the process of food irradiation, pallets of food are bombarded with powerful ionizing radiation such as gamma ray, x-ray, and electron irradiation. Some micronutrients such as thiamine (vitamin B1), Vitamin E, and Vitamin C are known to readily decay in the presence of these gamma rays. The degradation of the micronutrients are found to be dependent on the dosage of the radiation levels given. For example, up to 30% of thiamine degrades when 10 kGy of gamma radiation is applied, whereas up to 70% of thiamine is lost with 30 kGy.<sup>[3]</sup> Due to the sensitivity of some micronutrients to the irradiation process, the product's concentration of these vital nutrients is dependent on the dosage of irradiation used.

As the botanical industry increases its international trading, the regulations of allowed irradiation dosage is becoming more and more important in providing consistent products to the consumers. Countries around the world allows different permissible dosage of radiation for the purpose of sterilization. For example, France permits an allowable dose of 11 kGy for dry spices and herbs, whereas United States and Argentina permits a maximum dosage of 30 kGy.<sup>[3]</sup> With variable allowable dosage of irradiation for botanical herbs and materials in different countries, it is becoming more important to be aware of these irradiation process to ensure that the product remains consistent throughout the production.

We at ABC testing are proud to announce that we have added a new capability to test and determine if raw food products such as spices, herbs, fruits and minerals have been irradiated using the pulsed photostimulated luminescence (pulsed PSL) technique. By ensuring that the irradiation level of various lots and batches remains constant, the product's consistency can be increased to a further degree. We are delighted at the opportunity to provide our customers with additional valuable information about their products and continue to provide the most comprehensive services possible.

[1] FDA Radiation: Food Labeling (2012)

[2] Todoriki S., Kume T. Food Irradiation in Asia, the European Union, and the United States: a Status Update. *Radioisotopes*, 62, 291-299 (2013).

[3] World Health Organization. High-dose irradiation : wholesomeness of food irradiated with doses above 10 kGy. *WHO technical report series*, 890 (1999).