

Analysis of food irradiation

Eurofins is offering irradiation testing in food, dietary supplements and food additives.

Today, food irradiation is authorised in about 40 different countries for various kinds of food products. The treatment may be used for different purposes, e.g.:

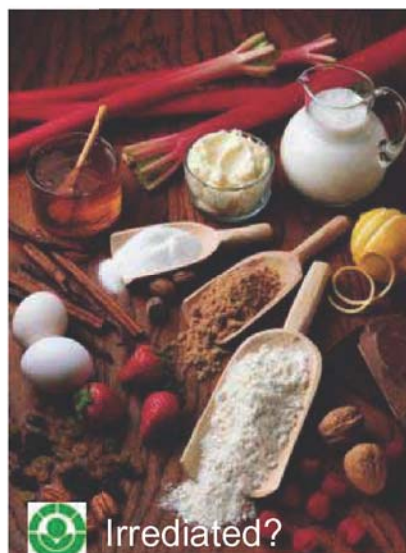
- Prevention of germination and sprouting of potatoes, onions and garlic;
- Killing or sterilising insects in grains, dried fruit, vegetables or nuts;
- Retardation of the ripening and ageing of fruit and vegetables;
- Prolongation of shelf-life and reduction of numbers of viable micro-organisms in meat, poultry and seafood;
- Reduction of numbers of viable micro-organisms in spices and herbs.

Worldwide, about 200.000 tons of food are irradiated, of which the biggest proportion is accounted for by spices. The number of foods to be irradiated is increasing.

Regulation

EU Member States may maintain restrictions or bans on irradiated foods until the completed EU-wide list of products authorised for irradiation is in force. In several European countries like Germany, Austria and the Scandinavian countries only herbs and spices may be irradiated and have to be labelled as such. France, Belgium, Italy, the UK and the Netherlands allow irradiation for a variety of different products ranging from potatoes,

garlic and onions to sea food, egg white and chicken meat. In the USA, any food that is irradiated as such or contains irradiated food ingredients has to be labelled with the raduron sign and the terms "irradiated" or "cold pasteurised".



Eurofins services

Eurofins is offering irradiation testing in food, dietary supplements and food additives according to the following EN-methods: electron spin resonance (ESR, prEN 13708), photon stimulated luminescence (PSL, EN 13751), thermoluminescence (TL, CEN 1788), the DNA-comet assay (EN 13784) and the analysis for the identification of hydrocarbons (EN 1784) and alkylcyclobutanones (EN 1785), compounds that result from irradiation treatment of fatty products.

Eurofins

Tel.: +41 62 858 7100

info@eurofins.ch
www.eurofins.ch

Analytical methods

Photostimulated luminescence (PSL), electron spin resonance (ESR) and thermoluminescence (TL) are the most commonly used physical techniques for spices, herbs, dried fruits and nuts. ESR detects paramagnetic centres like radicals, which can be found in solid and dry parts of food such as bones, seeds, pips, stones and peels. This allows

the analysis not only of dried food, but also of meat, sea food, fresh vegetables and fruits, and food packages. PSL and TL detect light, which is emitted from irradiated minerals like silicates upon stimulation with light (PSL) or heat (TL). PSL is a fast and reliable screening method, whereas TL requires isolation of silicates from the test material and a second glow of the same sample after exposure to a fixed dose of radiation.



The raduron sign for food labelling

Method	Advantage	Disadvantage
TL	Highly specific & sensitive (also detects doses > 1 kGy) No decay of signals (stable for many years)	High Turn-Around-Times Sensitivity depends on type and amount of silicates
ESR	Rapid (30 min) No destructive measurement (can be repeated)	Decay of signals on storage, depending on moisture Sensitivity depends on type and amount of crystalline structure
PSL	Rapid screening method, minimum sample preparation cost effective Sample can be measured more than once	In special cases false positive and negative results, needs to be confirmed with another validated method Sensitivity depends on type and amount of mineral debris and its distribution on the surface during measurement Decay of signals on storage and on repeated measurements

Contact:

Eurofins Scientific AG

Dr. Alain Winling
Parkstr. 10
CH-5012 Schönenwerd

Tel. +41 62 858 7100
Fax +41 62 858 7109
Email: info@eurofins.ch