

Korean space foods Using by irradiation Technology



Korean space foods

- Research for fusion technology of food science with various ionizing energies such as gamma ray, E-beam, X-ray is being investigated.
- Seventeen Korean space foods were developed using by the radiation fusion technology.
- Various spin-off applications (emergency food and patient meal) of space food technology are being conducted.
- Development of Korean Space foods(17 items) were completed.
- Korean Space foods(9 items) are registered in 2013.



Seventeen Korean space food certified by Russian Institute of Bio-medical problems



Supplement of Korean space foods to the first Korean astronaut, So-Yeon Lee

Specific traits



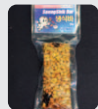
Kimchi

- Ready-to-eat
- Traditional Korean fermented vegetable



Bibimbap

- Ready-to-cook
- Traditional Korean cooked rice with red pepper and vegetables



Seangshik bar

- Ready-to-eat
- Nutrition bar mixed with non-cooked cereals and red ginseng



Bulgogi

- Ready-to-eat
- Marinated Korean beef with soy sauce



Ramen

- Ready-to-cook
- Freeze-dried noodle mixed with spice sauce

Emergency Food Using Irradiation Technology



Objective

Development of special foods edible under extreme conditions using by irradiation technology

Product

- Emergency food set with shelf-life over 2 years
- It can be served warm by using heating unit in the set.



Emergency food set



Bibimbap (110g, 420kcal)

- Ready-to-cook
- heat-dried cooked rice mixed with red pepper paste



Bulgogi (70g, 110kcal)

- Ready-to-eat
- Korean beef marinated with soy sauce



Dried persimmon chocolate (70g, 160kcal)

- Ready-to-eat
- coated dried persimmon jelly with chocolate

Accessories - Water500ml, Spoon, Tissue, Toothpick



Current status and prospect of food irradiation in Korea

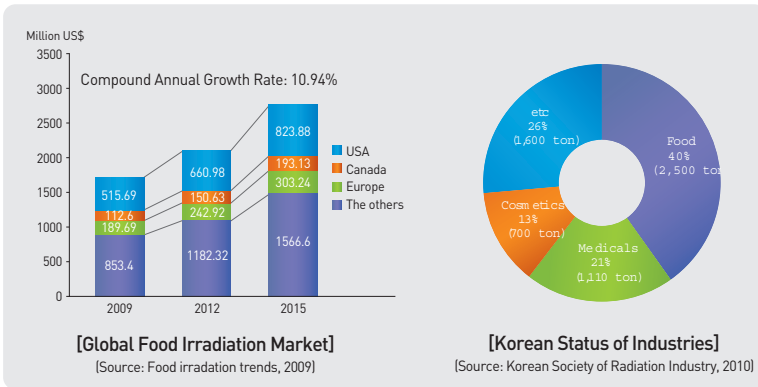


Korea Atomic Energy Research Institute
Advanced Radiation Technology Institute

Current Status of Food Irradiation in Korea



- Food irradiation is used on more than 253 food types in about 56 countries worldwide.
- The worldwide market is estimated at about 2 billion US dollars and increasing every year.
- In Korea, market share of food irradiation was 40% (2,500 tons) of all irradiated products.



Brief history of food irradiation in Korea

- 1975** Establishment of Pilot plant scale (Co-60, 100,000 Ci) irradiator by KAERI.
- 1980** Initiation of food irradiation studies for commercialization by KAERI.
- 1987** Construction of Korea's first commercial irradiator (Co-60 500KCi) by Greenpia Tech.
- 1987** First approval of food irradiation (5 foods) by the Korea Ministry of Health and Welfare.
- 1991** Second approval of food irradiation (6 foods).
- 1995** Third approval of food irradiation (6 foods).
- 2002** Second commercial irradiation facility had been constructed by Soya Inc.
- 2004** Fourth approval of food irradiation (9 foods).
- 2012** E-beam irradiation below 10 MeV was approved

Regulation on food irradiation in Korea



Approval dose(kGy)	Items	Purpose	Radiation source	Approval date
≤0.15	Potato, Onion, Gallic	Control germination	Gamma ray from Co-60	1987.10.16
≤0.25	Chestnut	Control germination	"	1987.10.16
≤1.00	Fresh or dried mushroom	Decontamination	"	1987.10.16
≤5.00	Egg powder, cereals, legumes and their powder as ingredient of food products, starch as ingredient of food products	Decontamination	"	1991.12.13
≤7.00	Dried meat and the powder of fish & shellfish as ingredient of food product, soybean paste powder, red pepper paste powder, soy sauce powder, dried vegetables as ingredient of food products, yeast & enzyme food, algae food, Aloe powder, Ginseng (including red ginseng) food	Decontamination	"	1995.5.19
≤10.00	Dried spice & its inferior article, composite seasoning products, sauces, leaching tea, powdered tea, sterile meals for patients	Decontamination	"	2004.5.24
Same as above doses	Same as above items	Same as above purposes	E-beam ≤ 10 MeV	2012.7.30

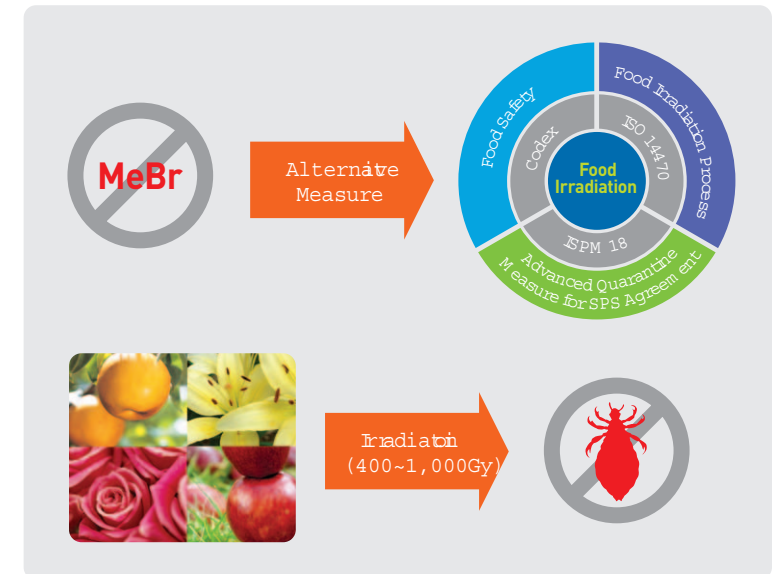


Phytosanitary Measure on Korean Agricultural Commodities



Quarantine treatment is process for the free from live pest of food and agricultural commodities for international trade.

By the Montreal Protocol, developing countries phase out using methyl bromide from 2015.



Status of Korea's agricultural exports

