

## Health Bits and Pieces (HFN 29:1)

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The Japanese nuclear disaster should be of concern to us all for many reasons, including the fact that there are nuclear reactors in California built on tectonic faults. So this issue's column is adopting a slightly different format to present critical protective information to you.

Iodine is important for the period of time after exposure to radiation in which radioactive iodine is present. Taking iodine in the form of potassium iodide is intended to saturate the chemical binding sites in the thyroid to prevent proteins in the thyroid gland from forming chemical bonds with radioactive iodine. Iodine offers no protection from any of the other radioactive elements, all of which have much longer half lives than iodine, except for thyroid support in some cases. There are several forms of iodine for oral use, such as iodoral and Lugol's solution. It is advisable to consult with your health-care provider before using iodine supplementation.

Beyond preventing the absorption of radioactive iodine, thyroid support is critical for radioprotection. It is also critically important to bind and remove radioactive toxins and supply electrolytes from mineral-rich sources to maintain transit of the lymph fluid, which can stagnate from the effects of ionizing radiation. There are many natural substances that have been found to be radioprotective. Some of them attach the radioactive toxins and take them out of the system. Others promote bone marrow activity, protect immunity and blood-production capability.

This is by no means an exhaustive list, but here are a few important radioprotective substances:

**Alginates** are derived from sea vegetation such as kombu (*Laminaria digitata*) and are used as a staple food source in East Asian countries. Sea vegetables rich in alginates are often used therapeutically for removal of toxic metals, like lead and mercury. They absorb and bind all kinds of other toxic materials as well, including radioactive isotopes. Sea vegetables are also the richest plant source of digestible minerals including many trace elements. [Ivannikov A, Altukhova G, Parfenova I, Popov B, "The effect of algisorb on the level of the accumulation of zirconium, ruthenium, iodine and cesium radioactive isotopes in the body of rats," *Radiats Biol Radioecol* (Radiation Biology and Radioecology) 1996 May-Jun;36(3):427-33 [Article in Russian]]

**Blue-green algae** and chlorophyll have been studied for radioprotective effects. They do not contain the level of iodine found in the marine algae, but are rich in digestible proteins and magnesium. [Zimmering S, Olvera O, Hernandez

M, Cruces M, Arceo C, and Pimental E, "Evidence for a radioprotective effect of chlorophyll in *Drosophila*," *Mutation Research* 245:47-49, 1990]

**Fireweed**, known as Great Willow-herb in Canada and or Rosebay Willow herb in the U.K, showed a radioprotective and therapeutic effect in experiments conducted in mice. The extract was administered orally and found to promote an increase in white blood cells, bone marrow, and spleen cells, increasing the survival rate among the animals. ["Hematopoiesis-stimulating and radiomodifying effects of a preparation from a plant *Chamaenerion angustifolium*. [English Abstract, Journal Article]," *Radiats Biol Radioecol* (Radiation Biology and Radioecology)2010 Sep-Oct; 50(5):536-41]

**Sea buckthorn** is used in Chinese and Tibetan medicine and has a variety of properties, including anti-inflammatory and possibly anti-cancer effects. [Y. H. Gu Y, Iida Y, Itokawa Y, et al., "Anti-cancer and radiation protection effects by *Hippophae rhamnoides*," 2007 Korean Conference on Oriental Pathology (Therapeutic Research for Intractable Diseases with Herbal Drugs), Seoul, 2007]

**Ginseng** has radioprotective potential as well as widely researched immunomodulating capabilities. Its radioprotective and immunomodulating properties are supported by a large number of studies. [Kim S, Jo S, Kim S, "Modification of radiation response in mice by ginsenosides, active components of *Panax ginseng*," *In Vivo* 17: 77–82, 2003; Kim T, Lee Y, Cho C-K, Park S, Choi S.-Y, Yoo S.-Y, "Protective effect of ginseng on radiation-induced DNA double strand breaks and repair in murine lymphocytes," *Cancer Biotherapy and Radiopharmaceuticals* 11:267–272, 1996]

**Ginger** has antioxidant and free radical-scavenging properties. It also stimulates thyroid function and enhances circulation. [Nabil G, Attia A, Elhag M, "Radioprotective effects of dietary ginger (*Zingiber officinales* Rosc.) against fast neutron-induced oxidative stress in rats," *World Applied Sciences Journal* 6: No. 4, pp.494-498, 2009]

**Mushroom extracts** contain beta and alpha glucans that have been found to protect from radiation, and even prevent genetic abnormalities and leukemia caused by radiation in test animals. [Yuen-hwa Gu, et al., "Enhancement of radioprotection and anti-tumor immunity by yeast-derived beta-glucan in mice," *Journal of Medical Food* 2005, Department of Radiological Technology, Suzuka University of Medical Science, Suzuka, Japan; Yuen-hwa Gu, et al., "Radioprotection and Anti-tumor Immunity in AHCC," Suzuka University of Medical Science, Japan, Proceedings of the 15<sup>th</sup> International Conference of the AHCC Research Society]

**Clay**. Fulvic acid and humic acid are found in clay, soil-based microorganisms, and the Ayurvedic medicine shilajit. The protective effect of humic acid against

radiation was demonstrated in rats using lethal doses of gamma radiation from radioactive cobalt. The lethal effect of the gamma rays was prevented by 50 percent in the experiments. Russian scientists are now using the same principle for treatment of radiation sickness. It has also been observed that radioactive cesium-137 in clay soils is not found in the local groundwater runoff because *it binds to the minerals in the clay*. [Pukhova G, Druzhina H, Stepchenko L, Chebotarev E, "Effect of sodium humate on animals irradiated with lethal doses," *Radiobiologiya* 27(5): pp. 650-653, 1987]

**Royal Jelly and Propolis** have long been used in China and elsewhere for their benefits to the immune system. Well-documented evidence shows that they counteract the effects of severe toxins formed by radiation. The antioxidants from royal jelly and propolis are clinically proven to strengthen immune response and protect the body from radiation. [Gu Y, Itokawa Y, Masubuchi T, et al, "Radiation protection and Immune enhancement effect in royal jelly," 2007 Korean Conference on Oriental Pathology (Therapeutic Research for Intractable Diseases with Herbal Drugs), Seoul, 2007. 10; El-Khatib A, Agha A, Mahran L, Khayyal M, "The use of aqueous propolis extract against radiation-induced damage," *Drugs Under Experimental and Clinical Research* 21(6).229-36 (1995)]