

## Radioactivity in Thai Rice and Medicinal Plants

Radioactive isotopes of elements (radionuclides) are naturally present in the environment, and that includes our bodies and our food and water. We are exposed to radiation (also known as background radiation) from these radionuclides on a daily basis. Radiation comes from space (i.e., cosmic rays) as well as from naturally-occurring radionuclides found in the soil, water and air. Radioactivity can be detected in food and water and the concentration of naturally-occurring radionuclides varies depending on several factors such as local geology, climate and agricultural practices. People can also be exposed to radiation from man-made activities, including medical diagnostic intervention. Background levels of radionuclides in foods vary and are dependent on several factors, including the type of food and the geographic region where the food has been produced. The common radionuclides in food are potassium-40 ( $^{40}\text{K}$ ), radium-226 ( $^{226}\text{Ra}$ ) and uranium 238 ( $^{238}\text{U}$ ) and their associated progeny. In general,  $^{40}\text{K}$  is the most commonly occurring natural radioisotope. Other natural radioisotopes exist in much lower concentrations, and originate from the decay of uranium and thorium. When large amounts of radioisotopes are discharged into the environment, they can affect foods by either falling onto the surface of foods like fruits and vegetables or animal feed as deposits from the air or through contaminated rainwater/snow. Radioactivity in water can also accumulate in rivers and the sea, depositing on fish and seafood. Open-air vegetables and plants can be affected by the atmospheric release of radionuclides, resulting in radioactive contamination. Over time, radioactivity can also build up within food, as radionuclides are transferred through soil into crops or animals, or into rivers, lakes and the sea where fish and other seafood could take up the radionuclides. In this presentation, I will focus on my concern about some studies and researches on concentration of natural ( $^{226}\text{Ra}$ ,  $^{232}\text{Th}$  and  $^{40}\text{K}$ ) and anthropogenic ( $^{137}\text{Cs}$ ) radionuclides in two important plants. As we know that Thai rice is the staple food of Thai people and also Thailand is one of the world's top exporters of Thai rice. But there is no systematic study and research available on concentration of natural and man-made radionuclides as expected. In addition, nowadays there are many people who are interested in alternative medicine by using medicinal plants as a treatment in Thailand. Where both patients and caregivers always use naturally grown medicinal plants and did not pay attention to the radioactive accumulation in those medicinal plants that may be adversely affected to some patients more or less. For this reason I would like to invite and motivate some of researchers and interested people turned their attention to research on measurement and analysis of concentrations of natural ( $^{226}\text{Ra}$ ,  $^{232}\text{Th}$  and  $^{40}\text{K}$ ) and anthropogenic ( $^{137}\text{Cs}$ ) radio-nuclides in Thai rice and medicinal plants to create very important standard database for our country and worldwide society.

**Author:** KESSARATIKOON, Prasong (Department of Physics Faculty of Science Thaksin University Songkhla Campus)

**Presenter:** KESSARATIKOON, Prasong (Department of Physics Faculty of Science Thaksin University Songkhla Campus)

**Track Classification:** Nuclear and Radiation Physics