



Radiographs of pork meat, banana (cut vertically and horizontally), and ginger

### Radiation from foods

- Mostly  $\beta$ -particles from Potassium-40
- The natural abundance ratio of Potassium-40\* is **0.012%**.
- Potassium-40 has a half-life of  **$1.26 \times 10^9$  years.**

\*Percentage of Potassium-40 relative to the total amount of potassium found in nature

Source: Applied Physics Vol.67, No.6, 1998

Potassium-40 contained in foods emits  $\beta$  (beta)-particles and  $\gamma$ -rays.

The distribution of potassium can be found by using an imaging plate<sup>1</sup> and detecting  $\beta$ -particles from Potassium-40.

The above image was obtained by placing pieces of pork meat, banana and ginger on an imaging plate and exposing for 25 days while blocking shielding external radiation. The protein part of the pork meat, the peel of the banana, and the buds of the ginger contain relatively large amounts of potassium. It can be seen that the fat portion of the pork meat contains little potassium.

1. An imaging plate is a support medium, such as a plastic sheet, coated with a fluorescent substance that reacts to radiation. By placing a sample containing radioactive materials on a plate for a defined period of time, two-dimensional distribution of radioactivity in the sample can be examined.

Included in this reference material on March 31, 2013

Updated on March 31, 2019