

Title: **Determination of the radioactive potassium content in bananas.**

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Bananas are known to be a great source of potassium. One of the natural isotopes of potassium, potassium-40, turns out to be radioactive. This isotope is classified as a beta and gamma emitter and even though it only represents a 0.0117% of the total natural potassium, its presence in bananas makes this fruit to be classified as a radioactive food.

For the determination of bananas potassium-40 content different radiochemical techniques have been used depending on the nature of the radioactive emission that is desired to measure. In one hand, the liquid scintillation technique for the beta particles emission and in the other hand the high resolution gamma spectrometry for the gamma rays emission. Furthermore, it has been used a Geiger-Müller counter, whose typical use is to quickly detect radiation in working surfaces with the aim of establishing a simple ^{40}K determination method in bananas to apply in teaching environments.

The determination of ^{40}K via high resolution gamma spectrometry in a banana ashes matrix and a reduced size geometry has provided the most exact results among all the others radiochemical techniques that have been used in this work. The design and application of a simple procedure for the same determination have been successfully achieved, having been banana ashes measurements with a Geiger-Müller counter the best option.

The determination has led to the establishment of the banana activity and the radiation dose received when this fruit is ingested. In the same way, such data have been used for the comparison of daily or extreme scenarios, such as tobacco use or a nuclear plant accident, with the emitted radiation by a single banana for the purpose of raise awareness of the continuous radiation that our bodies are subjected.

Keywords: Bananas, Radioactivity, Potassium, 40K.