

[10/09/99 - Painel]

## URANIUM INCORPORATION INVESTIGATED IN BEAGLE DOGS : EXPERIMENT DESIGN AND FIRST RESULTS

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It is a well-known fact that uranium is a trace constituent in rock phosphate, which is extensively used as a source of phosphorus for fertilizers and livestock feed supplements. Also, the sources of calcium used as animal feeding supplement, e.g. di-calcium phosphate (DCP) and bone ashes, present uranium at concentrations ranging from 2 to 200 ppm [1].

Since humans are consumers of animal products, it is very important to estimate how much of the ingested uranium is distributed throughout the organs, and what are the possible harms to the human health. We note that nearly 90% of the Beagles physiological characteristics are similar to those in humans [2]. This motivated us the planning and execution of an experiment with Beagle dogs at the facilities of the UNITOX laboratory from the Universidade de Santo Amaro-UNISA.

Twenty-seven male Beagle dogs, 3 months old, will be housed in bails forming groups of 3 animals each. The animals will be fed daily with dog chow doped by uranyl nitrate at concentrations ranging from 5 to 200 ppm, except for 2 control groups.

The following procedures and tasks will be carried out during the 8 months long experiment: (1) Daily control and measurements, of the amount of ingested food and animal weight; (2) Urine and feces will be weekly collected; (3) blood, hair, nail and skin (deep sample) will be monthly collected; (4) Liver biopsy at each 2 months and (5) Amputation of the 5<sup>th</sup> finger (front foot) at each 3 months.

The biological samples will be prepared for irradiation with thermal neutrons (the procedures were published elsewhere [3]) of the IPEN reactor (IEA-R1, 5MW, pool type), and the U content will be measured by the fission track counting and gama-spectroscopy techniques. The same U content evaluation will be carried out for all the necropsed organs (bone, muscles, liver, kidneys, etc.), following sacrifice after the 8<sup>th</sup> month.

The U concentration in each organ will be correlated with results from biochemical tests for organs functions evaluations, plus hematological and urine sediment quantitative analysis. Occult blood in feces will be sought for. Currently, the experiment is underway with two animal groups receiving 20 and 100 ppm-U daily, at 2<sup>nd</sup> month. The whole experiment, with all animals (27), is expected to be resumed by next year.

### References

[1] J.D.T. Arruda-Neto et al., J. Rad. Nucl. Chem. 221 (1997) 97.

[2] N.P. Sing, M.E. Wrenn, Health Physics 57 (1989) 91.

[3] J.D.T. Arruda-Neto et al., Applied Rad. and Isotopes (in press)