

Incidence of samarium on the lactating mammary gland tissue. Study using electron microscopy and second ion spectrometry

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Key words: samarium, mammary gland cells, conventional transmission electron microscopy, gland cells, ion mass spectrometry, lysosomes.

The frequent use of some lanthanides such as samarium makes us worry about their behaviour into the organism. Samarium is used in the medical treatment of prostate and bone cancers, of the knee pains,... and in the industrial domain such as car's batteries, television manufactures,...

The aim of this work was to study the intracellular localization of samarium in the rat lactating mammary gland cells after its parenteral administration, using transmission electron microscopy and ion mass spectrometry.

Electron microscopy results showed the presence of dense granules in the mammary glandular epithelial cells of the samarium treated rats. Ion mass spectrometry has demonstrated the presence of ¹⁵²Sm in the mammary epithelial cells. No deposit was observed in control rats.

Previous studies showed that the gallium, a IIIA group element were precipitated in the lysosomes of the glandular epithelial cells associated with phosphorus.

These data show that the deposits observed in the cell lysosomes may very probably be composed of an insoluble salt of samarium phosphate. The lysosome seems to be the main organelle in which are sequestered foreign or toxic elements.

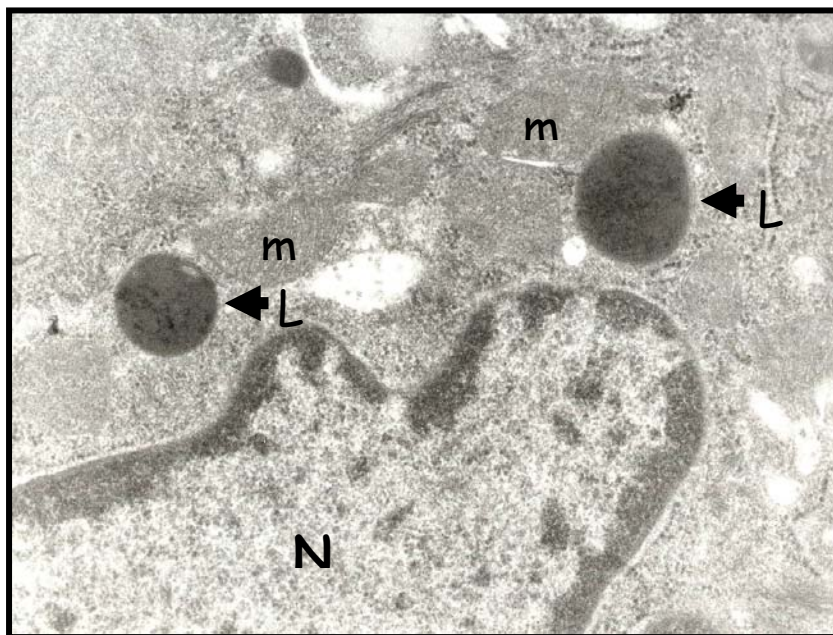


Figure 1. Ultrastructural study of the lactating mammary gland of a samarium treated rat. This image showed glandular epithelial cells with nucleus (N), mitochondria (m) and lysosomes charged with electron dense deposits (L).

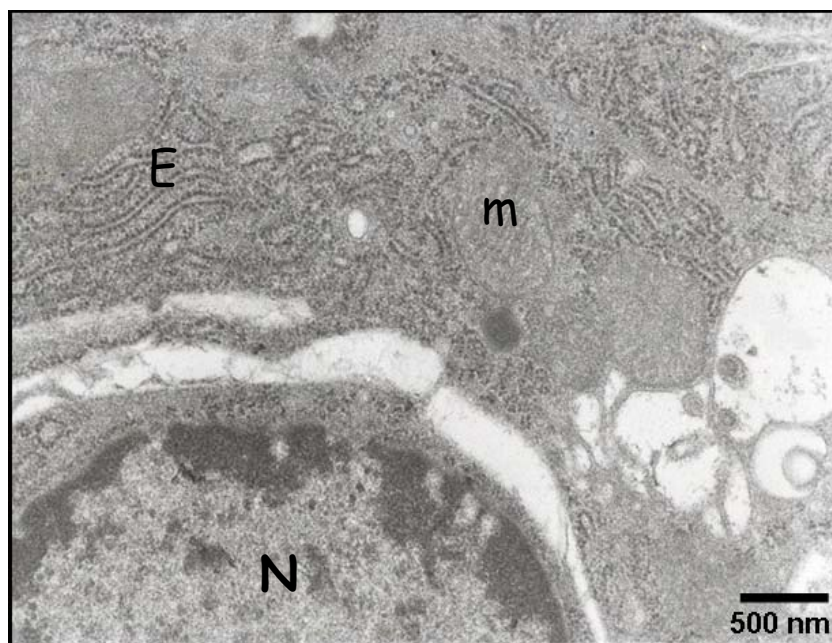


Figure 2. Contrasted section of the lactating mammary gland cell of a control lactating rat. We observe ergastoplasm (E), nucleus (N) and mitochondria (m).