ELECTRON MICROSCOPY EVALUATION OF RATS' HIPPOCAMPUS, INJECTED IN LATERAL VENTRICULE WITH FRACTION 3 OF THE ETHANOLIC EXTRACT OF BUNODOSOMA GRANULIFERA

Ángel R. Concepción, Roberto de la Peña, Teresita del Vallín.

Medical Genetic National Center, C.P. 10600, Havana, Cuba. E mail: ***aconce@giron.sld.cu*** ***aconce@cngen.sld.cu***

Bunodosoma granulifera is a Cuban sea common anemone. These animals produce essential neurotoxin substances for their own defense and nutrition. It has been obtained polypeptides with neuroactive properties using the whole animals as the ethanolic extract and its four fractions, by sephadex G-25 gel filtration [1]. It's known that intra hippocampus extract injection and its four fractions cause nervous tissue alterations in rats, such as fiber degeneration, myelin layer destruction, cytoplasm organelles alterations and residual bodies presence, in some cases [2]. On the other hand it's known the epileptogenic effect that the neurotoxic fraction 3 provoke in rats [3, 4].

Taking into account these evidences we evaluated by electron microscope the effects produced by the mentioned fraction 3. A microlitre of this toxin, in 1,38 μg concentration was injected in lateral ventricule of Sprague Dawley Rat, which were killed by intracardial perfusion seven days after the injection and the samples were processed for electron microscopy. It was used a Hitachi H-7000 Japanese microscope.

The control animal group, show their normal ultrastructural characteristic of neurons, the organelles and the surrounding tissue (Figure 1); whereas in experimental animal group, it was observed severe hippocampal pyramidal neurons degeneration, and granule neurons with very slight alterations. The pyramidal cells show too, moderated myelin layer destruction with moderated lipid concentration and severe mitochondria alterations; which reached near to five time its normal size and in its granulate endoplasmic reticulum, with formation of different vacuoles (Figure 2)

The results suggest that as the studied fraction, show specific actions on the hippocampal pyramidal cells, meanly on the endoplasmic reticulum and the mitochondria and because it also causes an epileptogenic effect, it should be continuing its purification process and evaluation until to find the pure substance responsible of these effects.

References

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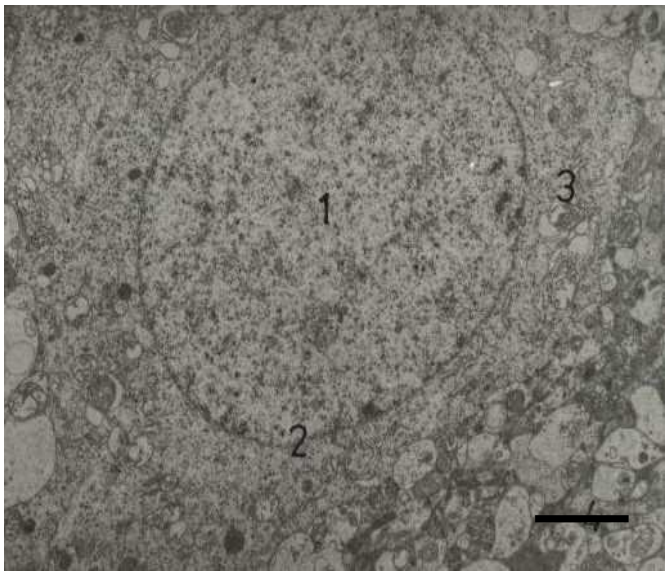

Figure 1. Ultrastructural characteristic of normal neuron. Nucleus (1), nuclear envelope (2), cytoplasm (3) and the surrounding tissue (4). Bar=500 nm

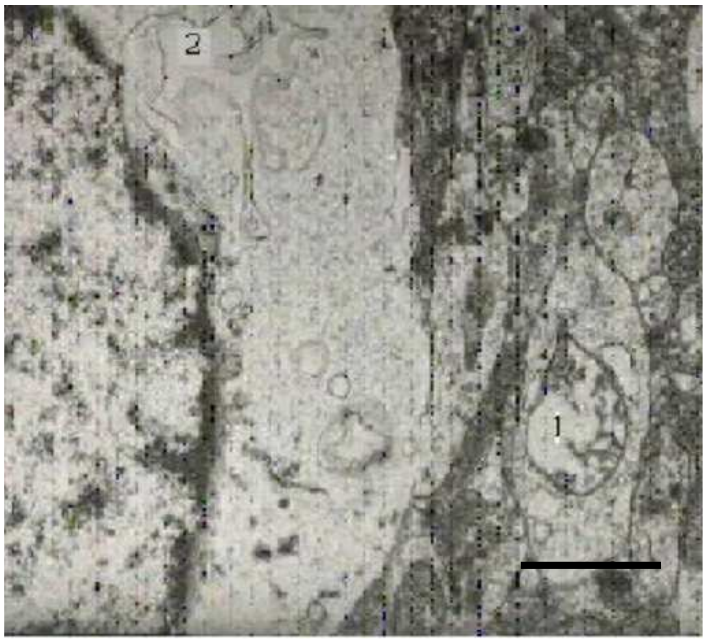

Figure 2. Experimental neuron. Mitochondrias (1) and cytoplasmatic vacuolizations (2) severe degeneration by the neurotoxic inyected. Bar=500 nm