

## THE EFFECT OF CYANOBACTERIAL TOXINS ON THE STABILITY OF INTRACELLULAR MEMBRANES

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The contamination of water by cyanobacteria (blue-green algae) is a serious health problem around the world. Among the toxic algae, *Nodularia* is the most common known genus producing nodularins, a group of toxins which are strongly cytotoxic. It is known that nodularins are highly liver specific and are potent inhibitors of protein phosphatases, which increase protein phosphorylation. It has recently been reported that these toxins damage lysosome membranes. However, the effect of nodularins on the stability of endoplasmic reticulum membranes has not been fully investigated.

The aim of this study was to analyse the influence of different doses of nodularin on the morphology and biochemistry of endoplasmic reticulum in mouse liver tissue. The activities of glucose-6-phosphatase (E.C. 3.1.3.9.) and microsomal alanine aminopeptidase (E.C. 3.4.11.2.) were determined in full homogenate and microsomal fractions of liver tissue. The morphological changes caused by the toxin treatments were analysed by transmission electron microscopy.

The results obtained clearly demonstrate that subacute doses of nodularin (5  $\mu\text{g}/\text{kg}/\text{bw}$ ) increase the activities of the examined certain enzymes in microsomal fraction and influence the development of endoplasmic reticulum.

However, acute doses of nodularin (20  $\mu\text{g}/\text{kg}/\text{bw}$ ) decrease the activities of the examined enzymes in the microsomal fraction and simultaneously increase the level of enzyme activity in the full homogenates. This indicates that acute doses of nodularin damage the endoplasmic reticulum membranes. These results concur with those of the electron microscope studies.