

**LEVELS OF RESPIRATION AND OXIDATIVE PHOSPHORYLATION IN REGARD
TO THE EFFECT OF TEMPERATURE OF EPAXIAL MUSCLE AND
ENCEPHALON MITOCHONDRIA FROM THE ANTARCTIC FISH *Trematomus
newnesi***

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A research was carried out on the effect of temperature on the respiration and oxidative phosphorylation rates from the Antarctic fish *Trematomus newnesi* pectoral epaxial muscle and the encephalon isolated mitochondria, assayed in the presence of α -ketoglutarate (α -KG), succinate (SUCC) or glutamate (GLU) as respiration substrates. The following values were found: with encephalon isolated mitochondria: in the presence of α -KG, it has been found an increase in the respiration rate of 1.75 times in the interval 0°C and 5°C; with glutamate and succinate of 1,71 and of 1,50 times between 0°C and 10°C, respectively. For the pectoral fin epaxial muscle mitochondria there was a clear inhibition of 57,4% between 0°C and 10°C in the presence of SUCC 91,8% in the presence of α -KG and 31,8% in the presence of GLU, improving, however, in a rate of 23% (SUCC), and 26% (GLU) between 0°C and 5°C, and reducing 52% in the presence of α -KG. From this results it is possible to establish some parameters in regard to the effect of temperature on the biochemical and physiological behavior of the mitochondria isolated from organs and tissues of Antarctic fish. This research shall continue on this important process which is in the root of Antarctic fish biological mechanisms of adaptation to extreme temperatures analyzed at molecular level. From the partial results showed in this series of experiments, some values on the respiratory control (RC) were also found, measured as a rate between the state 3 of respiration, i.e, in the presence of ADP, and in state 2, of respiration with substrate, in regard to the temperature in which the experiments were carried out. To complete these important researches, assays of respiratory control in the mitochondria preparation of organs and tissues of Antarctic and tropical fish are being carried on, in order to determine coupling or uncoupling states of the mitochondrial preparations between respiration and oxidative phosphorylation.

Key Words: respiration, oxidative, *Trematomus*.

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