# CHANGES OF ATPase ACTIVITY AND ATP LEVEL IN THERMOTOLERANT ERYTHROCYTES

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**Thermotolerance (TT) – resistance to elevated temperatures occurs in cells, organs and whole organisms. Hyperthermia with accompanying thermotolerance due to its role in cancer and AIDS treatment is an intensively studied phenomenon. Two targets of heat interaction with cells have been proposed – the nucleus and the cell membrane. Erythrocytes were used as a model in studies of membrane alterations caused by heat.**

**Our earlier experiments showed that erythrocytes were resistant to the second heat shock during the fractionated hyperthermia. The erythrocytes were suspended in incubation medium at hematocrit of 2%. Samples were incubated in the following way: at 44°C (15 min) and then at 37°C for 1–5 hours. The ATPase activity was determined by the method of Bartosz *et al.* (1994) and concentration of orthophosphate was assayed by the method of Veldhoven and Mannaerts (1987). ATP concentration was determined by ATP assay kit using the luciferin/lucifrerase luminescence system.**

**Activity of whole and $Na^+/K^+$ ATPase activity was increasing and reached its maximum after 3 h, then started to fall until the loss of activity after 7 h. ATP level was assayed under the same incubation conditions and similar time points of collection of samples. The results show that ATP concentration is changed during the time incubation at 37°C after preincubation at 44°C.**

**These results suggest that TT in RBC is induced by alterations in the energy metabolism.**