

## **ABSTRACT**

In rats, the environment with low content of oxygen induces the development of hypoxic pulmonary hypertension based also on remodeling of pulmonary resistance arteries. This process is particularly triggered by the mast cell degranulation products, especially rodent-like interstitial collagenase (matrix metalloproteinase 13). Sodium cromoglycate administration leads to an effective stabilization of the mast cell granules and thus to the modified remodeling process.

During 4-day and 21-day hypoxia, we treated Wistar Han rats with sodium cromoglycate in case control study. We assessed pulmonary vascular remodeling morphology using conventional histological techniques and immunohistochemistry. Then we assessed counts of pulmonary mast cells, both total and MMP-13 positive ones, around pulmonary arteries.

Hypoxia induced remodeling of all categories of pulmonary arteries. Sodium cromoglycate treatment in first four days of hypoxia modified and reduced these changes. Treatment in last four days of 21-days hypoxia experiment has only negligible effect. Hypoxia led to changes in collagen VI amount and distribution as well as decrease in number of toluidine blue detectable mast cell as well as MMP13 positive mast cells in the wall of pulmonary arteries.

Hypoxia led to significant remodeling of all pulmonary arteries and heart. The first four days of experiment sodium cromoglycate treatment modulate these changes. They are blocked after 4 days. After 21 days remodeling was already detectable, probably due to relatively short time effect of sodium cromoglycate. Sodium cromoglycate treatment in last four days of experiment has only little effect.