# Interrelation between endogenous growth factor (EGF) and proliferative activity of cardiomyocytes

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Regeneration of the myocardium as a result of proliferation of cardiomyocytes remains a questionable issue for the international science. Lack of the proliferation activity of cardiomyocytes may be explained by the following factors:
a) There is no production of reserve regional cambial cells of cardiomyocytes in the process of cardiogenesis.
b) Developed myocardium is organized as a functional symplast.
c) Sarcomeres of cardiomyocytes have a rigid structure.
Thus, investigation of the proliferative activity of cardiomyocytes is of current interest.

Myocardium of immature (5 and 19 day old) and adult (120-150 g) rats was used to evaluate proliferative activity of cardiomyocytes. Proliferative activity of cells was determined by „MI‰". The mitotic activity was determined for 3000-5000 cardiomyocytes in each experiment.

Proliferative activity of cardiomyocytes in 5 day old rats was equal to 14.4‰±0.7, whereas „MI‰" in cardiomyocytes of 19 day old rats was much lower (2,9‰±0,3). Single use of EGF extracted from the myocardium of adult rats decreased proliferative activity in cardiomyocytes of 5 day old rats on an average of 50%. Daily use of EGF in 5 day old rats during 2 weeks did not affect proliferative activity of cardiomyocytes. Single mitoses were found in cardiomyocytes of the normal myocardium of adult rats. No proliferation was observed in cardiomyocyts of the post-infarction myocardium and only stromal mitoses were found.

Obtained results indicate: proliferative activity in cardiomyocytes of 5 day old rats is intensive and decreases significantly in 19 year old rats; EGF shows inhibitory effect in the proliferative myocardium; absence of the inhibitory effect of EGF after multiple use, presumably, may develop due to the saturation of receptors of the target cells because of the high concentration of EGF.

This work will be continued for further identification of EGF and to determine its role in the processes of myocardium regeneration.