

Research

PROMOTION OF ANGIOGENESIS BY LOW ENERGY LASER

Mirsky, N.; Krispel, Y.; Shoshany, Y.; Maltz, L.; Oron, U.

The Faculty of Science, Haifa University
Oranim, Tivon 36006,

The effect of low energy laser (He-Ne) irradiation (LELI) on the process of angiogenesis in the infarcted rat heart and in the chick chorioallantoic membrane (CAM), as well as the proliferation of endothelial cells in tissue culture, was investigated.

Formation of new blood vessels in the infarcted rat heart was monitored by counting proliferating endothelial cells in blood vessels. In the CAM model, defined areas were laser-irradiated or nonirradiated and blood vessel density was recorded in each site in the CAM at various time intervals.

Laser irradiation caused a 3.1-fold significant increase in newly formed blood vessels 6 days post infarction, as compared with nonirradiated rats. In the CAM model, a slight inhibition of angiogenesis up to 2 days post irradiation and a significant enhancement of angiogenesis in the laser-irradiated foci as compared with control nonirradiated spots were evident. The LELI caused a 1.8-fold significant increase in the rate of proliferation in endothelial cells in culture over nonirradiated cells.

It is concluded that LELI can promote the proliferation of endothelial cells in culture, which may partially explain the augmentation of angiogenesis in the CAM model and in the infarcted heart. These results may have clinical significance by offering therapeutic options to ameliorate angiogenesis in ischemic conditions.

Key words:

*Myocardial Infarction --PA; *Neovascularization, Physiologic --RE Allantois -- BS; Allantois --PH; Animal; Chick Embryo; Chorion -- BS; Disease Models, Animal; Lasers; Male; Myocardial Infarction --TH; Rats; Rats, Sprague-Dawley

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