REVIEW OF CLINICAL PHARMACOLOGY AND
PHARMACOKINETICS, INTERNATIONAL
EDITION 20: 155 (2006)

Expression of Heparin Affin Regulatory Peptide is Essential for Angiogenesis *in vivo*

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Key words: HARP, pleiotrophin, angiogenesis, CAM, transfection

Heparin-affin regulatory peptide (HARP), also known as pleiotrophin or heparin-binding growth-associated molecule, is an 18 kDa growth factor that has a high affinity for heparin. HARP is involved in the control of cellular proliferation, migration and differentiation. Moreover, there is a strong correlation between HARP expression and tumor growth and angiogenesis. In the present work, we studied the expression of HARP during development of the chicken embryo chorioallantoic membrane (CAM), in relation to angiogenesis. By western blot analysis and RT-PCR, it was shown that HARP expression increased at days of on-going angiogenesis and decreased at later time points. Transfection of CAMs with an anti-sense HARP gene construct led to a significant decrease in HARP amounts compared to vector control transfected CAMs, and a significant decrease in the number of CAM blood vessels. These data suggest that endogenous HARP is involved in the development of new blood vessels in the chicken embryo CAM and indicate that anti-HARP activity may serve as a therapeutic target for angiogenesis-associated diseases.