

ORAL COMMUNICATIONS

ENHANCING ANGIOGENESIS IN *HIRUDO VERBANA* USING NANOSTRUCTURED SCAFFOLDS PRIMED WITH HUMAN DENTAL PULP STEM CELL SECRETOME**G. Marcolli¹, S. Zorzetto¹, N. Baranzini^{1|2}, L. Pulze^{1|2}, L. Barone¹, F. Rossi¹, R. Gornati¹, A. Grimaldi^{1|2}**¹Dept. of Biotechnology and Life Sciences, University of Insubria, Varese, Italy; ²Italian Leech Farm (ILFARM) S.r.l, Varese, Italy

Chronic inflammatory and age-related disorders impair vascularization and significantly compromise wound healing¹. Since neoangiogenesis relies on a supportive extracellular matrix (ECM), biomaterials capable of mimicking the native ECM are a key focus in regenerative medicine².

Within this context, this study investigates a cell-free therapeutic strategy combining a collagen-based dermal substitute (MicroMatrix[®] UBM Particulate) with the secretome derived from human Dental Pulp Stem Cells (hDPSC-S) to enhance angiogenesis. The medicinal leech *Hirudo verbana* was used as an in vivo model for vascular studies. MicroMatrix[®] was reconstituted either in starvation medium (used as a control) or in hDPSC-S and subsequently implanted.

After one week, histological and immunohistochemical analyses showed successful integration of the scaffold in both experimental groups. However, hDPSC-S-enriched scaffolds induced a markedly stronger host response, with increased recruitment of regenerative cell populations, including telo-

cytes and hematopoietic stem/progenitor cells, and enhanced neovascularization compared to controls.

These findings demonstrate that MicroMatrix[®] combined with hDPSC-S represents a promising cell-free regenerative approach for the treatment of chronic ischemic conditions and non-healing wounds, such as diabetic ulcers³.

References

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