HiPep Laboratories

AGP: Angiogenic Peptide for Reconstruction Medicine

Previously we have siscovered small peptide exhibiting the adhesion activity with a significant angiogenic activity, designated AGP (USA EU & Japan-Patents). Recently focusing on clinical applications the structure of AGP was improved.

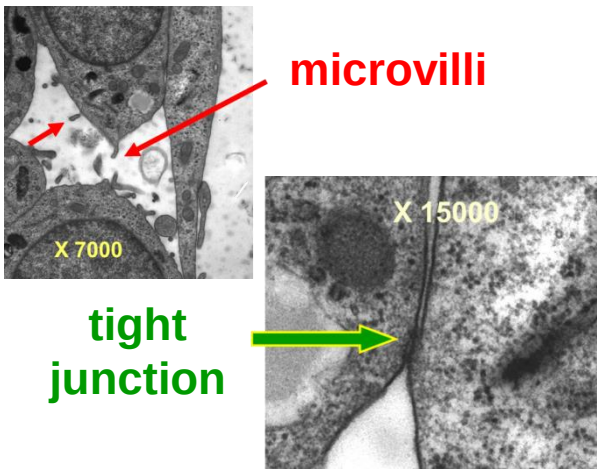
- Vascularization is one of the key steps for engraftment in regenerative medicine
- Structure-activity relationship was elucidated and showed position 4 was particularly important, where the effect of Phe was slightly stronger than that of Tyr while both the N- and C-termini are not crucial. Based on the above findings the following designs were attempted to prove enzymatic resistance, incorporating structure with C-terminal amide and/or cyclic peptides with disulfide or oxy-ethylene chains.
- For neovascularization bFGF was used although permeation can be envisaged. The original AGPs did not suffer from this although half-life times of AGP were short because of decomposition by endogenous enzymes. AGP having improved characteristics have been designed and prepared by the use of human umbilical vein endothelial cells to find candidates for clinical applications.
- The ability of angiogenesis was observed as tubular formation and in prolonged culture AGP030 maintain the strongest effect which was quantified. Linear AGP had higher tube-forming ability than that of cyclized AGP, on the other hand, AGP030 has a disulfide with L-Cys and showed similar tube-forming ability as linear AGPs and higher ability than that of AGP010.

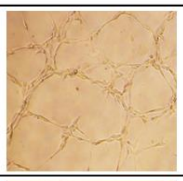
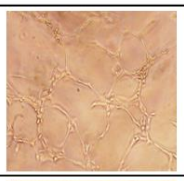
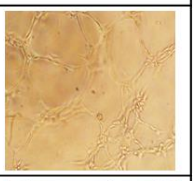
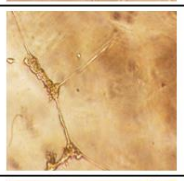
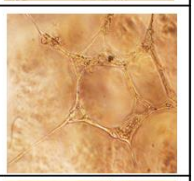
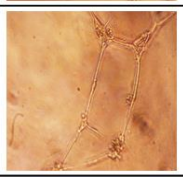
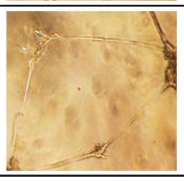
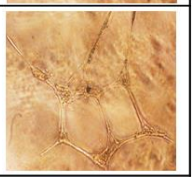
***Novel AGPs having longer half-life time**

P/N	Improved strutures
AGP010	Cyclic(O2Oc-**SVVFGLR**Q)-NH_2
AGP030	Cyclic(***L***Cys-O2Oc-**SVVFGLR**-G-***L***Cys)-NH_2
AGP040	O2Oc-**SVVFGLR**-NH_2
AGP002	Original: Ser-Val-Val-Phe-Gly-Leu-Arg

We are ready for Licensing, Material supply → Clinical applications (Collaboration)

Morphological evidence for Tube formation



PN / time	AGP010	AGP030	AGP04
2 hr			
18 hr			
24 hr			

Microscopic observations of the 3-dimensional culture using human umbilical vein endothelial cells (HUVEC)

Refences Peptide Science 2000, 373-376, 2001; BBRC, 310(1), 153-157, 2003;
***Bioorganic & Medicinal Chemistry, 28, on line 2020 Aug 3, DOI:10.1016/j.bmc.2020.115685**

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