

Licensing Opportunity



Accelerated wound healing via modified forms of naturally occurring peptides

- Histatin, a salivary peptide, induces epithelial migration and accelerates wound healing
- Chemically modified histatin increases in vitro activity by 1000-fold
- Histatin is not toxic, has no pro-inflammatory effects, and generates no adverse effects on scar tissue formation
- Multiple delivery methods may make histatin therapy useful for diverse wound-healing applications, as well as other possible fields of use

Therapeutic use of novel wound-healing peptides

2011

Background

It has been long observed that oral wounds heal much faster than, for example, skin. Theories relate this effect to physical factors of the mouth, including increased blood flow, constant moisture and temperature, and antibacterial properties of saliva. Recent studies establish that novel activity of a naturally occurring peptide, histatin, may be responsible for a large portion of the accelerated wound healing process.

The Technology

It was recently discovered, through serial HPLC fractionation of salivary proteins and peptides, that one specific fraction, later identified as the peptide histatin, actively induces epithelial migration. Additional efforts to understand peptide/receptor interaction allowed development of a synthetically modified version that was 1000X more active in assays than the native peptide. Furthermore, histatin, both modified as normal, acts specifically and with no toxicity, at a wide range of molar concentrations. In skin substitute in vitro models, histatin induced wound healing without inducing scarinducing protein deposition or inflammatory response.

Intellectual Property

The VU University, Amsterdam, The Netherlands, has filed national patents for clinical wound-healing applications. The original filing may be found under WO2009087117.

Inventors

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Key publications

1. Oudhoff MJ, Kroeze KL, Nazmi K, van den Keijbus PAM, van 't Hof W, Fernandez-Borja M, Hordijk PL, Gibbs S, Bolscher JGM, and Veerman ECI. Structure-activity analysis of histatin, a potent wound healing peptide from human saliva: cyclization of histatin potentiates molar activity 1000- fold. FASEB Journal November 1, 2009; 23(11): 3928- 3935.
2. Oudhoff MJ, van den Keijbus PAM, Kroeze KL, Nazmi K, Gibbs S, Bolscher JGM, and Veerman ECI. Histatins Enhance Wound Closure with Oral and Non-oral Cells. Journal of Dental Research September 1, 2009; 88(9): 846- 850.
3. Oudhoff MJ, Blaauboer ME, Nazmi K, Scheres N, Bolscher JGM, Veerman ECI. The role of salivary histatin and the human cathelicidin LL-37 in wound healing and innate immunity. Biological Chemistry 2010; 391 541- 548.
4. Oudhoff MJ, Bolscher JG, Nazmi K, Kalay H, van't Hof W, Amerongen AV, Veerman ECI. Histatins are the major woundclosure stimulating factors in human saliva as identified in a cell culture assay. FASEB Journal 2008; 22: 3805- 3812.