

Growth Factor Regulation in Blood Products for Improved Wound Healing

Published date: July 20, 2017

Technology description

Growth factor regulation is a key function of the extracellular matrix and critical for proper blood vessel growth and maturation during wound healing. In particular, blood vessel sprouting is essential for effective healing and dependent on the well-regulated activity of vascular endothelial growth factor (VEGF). Research has shown that blood vessel sprouting can only occur within a limited VEGF concentration range *in vivo*.

The need to maintain VEGF activity within a particular concentration range during angiogenesis has motivated the search for therapeutic interventions when natural regulation is dysfunctional, such as during diabetic wound healing and tumor growth. Unregulated VEGF activity can result in hemangioma formation and is linked to poor musculoskeletal wound healing, ocular disease and other health concerns. UW–Madison researchers have developed hydrogel microspheres for sequestering problematic growth factors, specifically VEGF, in patient-derived blood products. The degradable microspheres are functionalized with peptide ligands that selectively bind and remove unwanted VEGF from platelet rich plasma and other blood products before they are used in clinical procedures. The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing hydrogel microspheres that selectively remove VEGF from blood products prior to clinical use.

Application area

Medical device for the purification of autologous blood products and/or clinical delivery of products that have been selectively altered

Common uses of platelet-derived growth factors include wound healing and recovery from sports-related injuries.

Advantages

Lower cost and more convenient than existing antibody-based approaches

Enables intraoperative processing of blood products prior to clinical use

Institution

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