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The therapeutic benefits of melittis melissophyllum extracts in wound healing**Agnieszka Zakrzaska**

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Plants and their extracts have long been used as a substantial source of medicines and have immense potential for the management and treatment of superficial wounds. The process of wound healing is comprised of a continuous sequence of inflammation and repair. The wound healing process occurs in a continuous and integrated manner. Successful wound healing is dependent upon various cell types, molecular mediators and structural elements. The wound healing process is not only complex but also fragile, and it is susceptible to interruption or failure leading to the formation of non-healing chronic wounds. It was recently discovered that *M. melissophyllum* extracts have high therapeutic activity in all stages of the wound healing process, relieve inflammation, accelerate cell proliferation and therefore shorten overall time to wound closure.

Male Wistar rats, 208-300 g was divided in three group with open wounds were involved: group 1, control with no treatment, group 2, a typical antiseptic agent was used, in accordance with a standard protocol regarding a treatment of an infected wound, group 3, the herbal preparation with *M. melissophyllum* extracts was used.

Recent, in vitro studies have demonstrated inhibitory effect on inflammation and limited cytotoxicity to human keratinocytes and dermal fibroblasts. Immunogenicity testing did not show any significant allergic response. Histological experiments demonstrated the formation of normal epithelial layers on the wound surface as evidenced by 20 % increase in collagen content in wound tissue. Herbal extract has comparable antimicrobial property to antiseptic agent.

Evaluation of DNA biosynthesis increased ~3X relative to the control group and significant collagen deposits were observed in the wound tissue. Additionally, the drug treatment group showed a significant increase in strength of scar tissues in the incision wound model and also increased the strength of collagen tissue.

In addition, it has been shown that the formation of multilayer cells in the upper regions of the wound, enhanced barrier function for external invasion of microorganism and resulted in accelerated wound closure by 3-4 days. With complete epithelization on the 9-th day vs. 12-13 day for control.

This natural agent demonstrated promising results and improved wound healing and regeneration of the lost tissue by multiple mechanisms without any observance of toxic effect on either the immediate area of tissue damage or the full body.

Biography

Agnieszka Zakrzaska has been Graduated of 2001 from the Medical Academy of Bialystok, Poland as laboratory diagnostician. In 2006 obtained title Doctor of Philosophy in the field of medical biology from the Medical University of Bialystok. In 2001 started working at The Department of Experimental Physiology, then from 2009 at the Department of Biopharmacy Medical University of Bialystok, Poland where she has continued his research. Presently she has been working as the Dean of the Faculty of General Medicine, University of Medical Science in Bialystok, Poland

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