

ASIA-PACIFIC DERMATOLOGY AND COSMETOLOGY CONFERENCE

AUGUST 16-17, 2018 TOKYO, JAPAN



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Experience of growth factor cocktail treatment in the patients with Androgenic Alopecia (AGA)

For hair loss therapy, several substances have been proposed such as Platelet-Rich Plasma (PRP), stem cells therapy, low level laser therapy, etc. except oral and topical medications. PRP and stem cells therapy are both painful and expensive. But Growth Factor Cocktail (GFC) with microneedling is painless and its cost is not expensive. It is a novel and safe treatment for AGA. Microneedling creates microperforations in the scalp in order to produce controlled damages to release endogenous growth factors and facilitate drug delivery. Two kinds of GFC, provided by Mediway (present Aes Med) and PnP Biopharm are used. The major components of the GFC provided by Mediway: SGF 57™ (Systematic Growth Factor) included 25,000 ng of Superoxide Dismutase-1 (SOD), 15,000 ng of basic Fibroblast Growth Factor (bFGF) and Vascular Endothelial Growth Factor (VEGF), 12,500 ng of Keratinocyte Growth Factor-2 (KGF-2), Stem Cell Factor (SCF), noggin and 10,000 ng Insulin-like Growth Factor-1 (IGF-1). The GFC provided by PnP Biopharm (Cellcurin™) consisted of basic Fibroblast Growth Factor (bFGF, 2.5 µg/mL), Vascular Endothelial Growth Factor (VEGF, 2.5 µg/mL), Keratinocyte Growth Factor-2 (KGF-2, 2.5 µg/mL), Stem Cell Factor (SCF, 2.5 µg/mL), Insulin-like Growth Factor-1 (IGF-1, 1.25 µg/mL), Superoxide Dismutase-1 (SOD-1, 5 µg/mL), noggin peptide (10 µg/mL) and fibroblast growth factor 9 (FGF9, 2.5 µg/mL). GFC, provided as a freeze-dried powder, is dissolved in 5 mL normal saline before use and is applied on the scalp. The microneedle apparatus used in facilitating drug delivery (Raffine™; Woorhi Mechatronics, Anyang, Korea) consists of nine 33-gauge microneedles with automatic vertical movements (4200-6000 rpm) and the needle depth is adjustable from 0.1 to 2.0 mm. In current study, micro-needle depths of 0.5-0.8 mm can sufficiently stimulate the scalp to increase the drug delivery effect. Thickness of the epidermis of the patients with AGA is thinner than that of normal person. Patients are treated every two weeks interval and for a period of several months. In March 2016, therapeutic effects of GFC and in the report; a microneedle depth of 0.5 mm was more effective than that of 0.3 mm depth was reported. In my split study of September 2017, the scalp was divided into two sides as right and left and treated with GFC including FGF9 (right side) and normal saline (left side) with a microneedle depth of 0.8 mm. Treatment efficacy was evaluated by phototrichogram (Folliscope 2.8™, Lead M, Seoul, Korea) and digital photograph analysis after six repeated treatments for 3 months. GFC including FGF9 showed significant increase on hair density and hair thickness than normal saline. But the treatment effect was not significantly different between microneedle depths of 0.8 mm (used in this study) and 0.5 mm (used in the previous study).

Biography

Byung In Ro has graduated from Catholic Medical College in 1969, Seoul, Republic of Korea and got Specialty in Board of Dermatology in 1974. He was appointed as an Assistant Professor in 1978 and Professor of the Department of Dermatology, College of Medicine, Chung Ang University, Republic of Korea and presently he is appointed as Invited Professor of the Myongji Hospital, Goyang, Republic of Korea. He is a Chief of Editorial Board of the Korean Journal of Medical Mycology since 1996 and he is a Founding Member, Secretary General (1994-2000) and President of the Korean Society for Medical Mycology since 2002. Also he is a Founding Member and Secretary General of the Asia Pacific Society for Medical Mycology since 1995. He was a Chairman, Board of Directors (1997-1999), Vice President (1999-2000) and a Chief of Committee of Education of the *Korean Dermatological Association* since 2001. He has particular interest in mycology, alopecia, herpes zoster and biochemistry of the skin. He has published around 350 papers including chapters of the textbook.

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