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Effect of Chaff Vinegar Liquor on Promotion of Hair Growth in Alopecia Mice Model C57BL/6

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C57BL/6 마우스 모델에서 왕겨초액의 모발성장효과

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Introduction

Chaff vinegar liquor is one of the carbonated vinegar liquors being used widely in folk remedy to improve hydration in human skin. The antibacterial activity, antitumor effect and improvement in lipid metabolism are among the reported effects of chaff vinegar liquor, although some of these activities have not been confirmed through appropriate scientific scheme. The objective of the present study was to evaluate the effect of chaff vinegar liquor in promoting hair growth in vivo.

Materials and Methods

Six-week-old female C57BL/6 mice were obtained and then allowed to adapt for 1 week with ad libitum food and water. The mice were randomly divided into 5 treatment groups of 6 mice each. The backs of mice were shaved with animal clipper at 7 weeks of age when all follicles were synchronously in telogen stage. Starting from one day after shaving, chaff vinegar liquor was topically applied at doses of 0.4, 1.2, and 4 mg/mL daily for 14 days. The negative and positive control groups were treated similarly with isotonic saline and Minoxidil 3%, respectively. Hair growth promoting effect was evaluated visually by the darkening of skin color, which indicated telogen-to-anagen conversion. Mice were sacrificed and skin samples were collected for histological and semi-quantitative RT-PCR. Expression of mRNA for insulin growth factor-1(IGF-1), vascular endothelial growth factor (VEGF), keratinocyte growth factor (KGF), and hepatocyte growth factor (HGF), which are implicated in regulation of hair growth cycles in mice skin, were checked.

Results

In the current study chaff vinegar liquor-induced telogen-to-anagen conversion and size of hair follicular increase was observed in gross and histological examinations, respectively. Similarly the RT-PCR result revealed a dose-dependent increase in the expression level of IGF-1, KGF and VEGF mRNA by chaff vinegar liquor in mice skin. The results obtained with a 4.4 mg/ml chaff vinegar liquor was comparable to that of the positive control (Minoxidil 3%) group. However, the mRNAs of HGF were not substantially affected by chaff vinegar liquor treatment.

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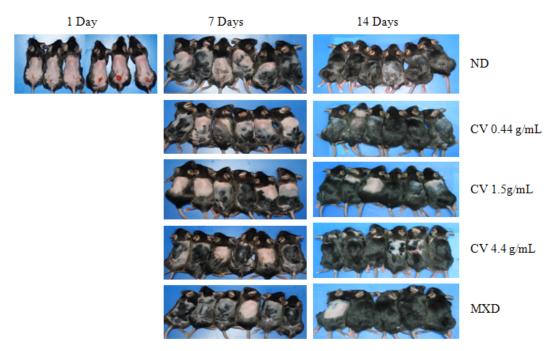


Fig 1. Hair growth change in C57BL/6 mice as alopecia model in a time- dependent manner for 2 weeks ND, normal saline; CV, chaff vinegar; MXD, Minoxidil 3%

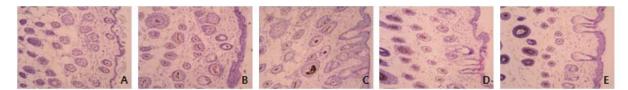


Fig 2. Effect of chaff vinegar on histological observation of the skin tissue

(A)mouse skin tissue with treated normal saline (B) chaff vinegar 0.44 mg/mL (C) chaff vinegar 1.5 mg/mL

(D) chaff vinegar 4.4 mg/mL (E) Minoxidil 3% treated C56BL/6 mice. Original magnification 400X

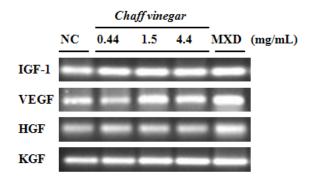


Fig 3. Effect of chaff vinegar on the mRNA level of growth factors in mice skin by semi quantitative RT-PCR analysis