**P001**

Cocoa flavanol supplementation influences skin conditions of photoaged women: a 24-week double-blind, randomized, controlled trial

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**Background:** The consumption of dietary antioxidants is considered to be a good strategy against photoaging. However, the effects of oral consumption of high-flavanol cocoa products on skin photoaging have been contradictory.

**Objectives:** The aim of this study was to investigate whether high-flavanol cocoa supplementation would improve the photoaged facial skin of female participants, by assessing skin wrinkles and elasticity.

**Methods:** We performed a 24-week, randomized, double-blind, placebo-controlled study. All participants were moderately photoaged women (age range 43 to 86 years). Participants were randomly assigned to receive a placebo beverage or cocoa beverage that contained 320 mg of total cocoa flavanols per day. We measured wrinkles, skin elasticity at baseline and at 12 and 24 weeks.

**Results:** At week 24, the mean percentage change in the average roughness (Rz) was significantly lower in the cocoa group than in the placebo group (difference -8.7 percentage points, 95% confidence interval [CI] -16.4 to -0.9; P = 0.029). Gross elasticity (R2), as determined by a cutometer, began to improve after 12 weeks of supplementation (difference 9.4 percentage points, 95% CI 2.1 to 16.8; P = 0.013); and the effect was maintained with supplementation continuing for a total of 24 weeks (difference 8.6 percentage points, 95% CI 0.7 to 16.5; P = 0.034).

**Conclusion:** In moderately photoaged women, regular cocoa flavanol consumption has positive effects on facial wrinkles and elasticity.

Keyword: Cocoa, Flavanol, Photoaging, Skin, Wrinkle

**P002**

An anti-aging effect of cream containing mucus secreted by snails

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**Background:** A cream from mucus secreted by snails has 80% of mucin of snail. It contains glycosaminoglycan, allatoin for skin rejuvenation, glycolic acid for keratin removal, collagen and elastin, which are the components of dermis.

**Objectives:** The aim of this study was to evaluate the efficacy of cream containing the mucus secreted by snails in reducing wrinkles, improving skin elasticity, density of dermis and lifting.

**Methods:** Cream containing the mucus secreted by snails was applied to lateral epicanthal areas and left cheek of 10 subjects for 4 weeks. Wrinkles, improvement of skin elasticity, dermal density and lifting were evaluated at base, every 2 and 4 weeks. Satisfaction survey by patients was done after 4 weeks.

**Results:** Comparing the changes between base and 4-week-result after applying cream, there were statistically significant improvement in wrinkles, skin elasticity, density of dermis and lifting.

**Conclusion:** The treatment of cream containing the mucus secreted by snails seems to be effective in anti-aging treatment. However, long-term follow-up such as 3 or 6 months for confirmation of treatment efficacy should be established through further clinical trials involving a larger number of patients.

Keyword: Density of dermis, Lifting, Mucus secreted by snails, Skin elasticity, Wrinkles

**P003**

Phlorizin, an active ingredient of eleutherococcus senticosus, increases proliferative activity of keratinocytes with increased expression of type iv collagen and inhibition of MiR135b

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Background: E. senticosus extract (ESE) has been used as an antiaging agent in the skin although it has several systemic beneficial effects.

Objectives: The effects of E. senticosus extract (ESE) and its active ingredient phlorizin (PZ) were investigated.

Methods: Cultured normal human keratinocytes and skin equivalents are used to test the effects of PZ whether they affect proliferative activity of keratinocytes and how they regulate these effects.

Results: The epidermis became slightly thickened on addition of 0.002% ESE. The staining intensity of p63 and proliferating cell nuclear antigen (PCNA) is increased, and integrin α6 was up-regulated. Analysis of ESE by HPLC and NMR spectroscopy confirmed that PZ is the main ingredient. SE models were treated with PZ and the staining intensity of p63 and PCNA is also increased. Expression of integrin α6, integrin β1, and type IV collagen was also increased. Next, levels of miR135b and mRNA levels of integrin α6, integrin β1, and type IV collagen were examined in cultured normal human keratinocytes. Levels of mRNA for type IV collagen were increased and levels of miR135b were down-regulated.

Conclusion: PZ can affect the proliferative potential of epidermal cells in part by microenvironment changes via miR135b down-regulation and following increased expression of type IV collagen.

Keyword: E.senticosus, Phlorizin, Type IV collagen, miRNA

P004

Functional role of TFG in collagen synthesis in human dermal fibroblast

Background: TFG encodes a protein which is a conserved regulator of protein secretion and controls the export of materials from the endoplasmic reticulum. There is no paper about functional role of TFG in skin except TFG works as a tumor suppressor gene in metastatic melanoma.

Objectives: We investigated the use of genome-wide association study (GWAS) to explore molecular basis of skin phenotype of wrinkle and the effect of TFG on collagen and matrix metalloproteinase expression in human dermal fibroblasts.

Methods: A GWAS was conducted to investigate the genetic factors influencing wrinkle formation in Korean females along with molecular studies of genes in human dermal fibroblasts for functional study in vitro.

Results: GWAS identified 24 SNPs that were highly associated with skin wrinkle. Among the genes, we investigated the effect of TFG gene in human dermal fibroblasts. When TFG was overexpressed, COL1A1 and COL1A2 protein level were increased and UVB decreased the expression of COL1A1, COL1A2 and TFG.

Conclusion: The results suggest that TFG is a positive regulator on collagen expression in dermal fibroblasts. And our results suggest that genetic variants in the intronic region of TFG could be determinants in the wrinkle formation of Korean females.

Keyword: Collagen Type I, Fibroblast, Matrix metalloproteinase, Skin aging, TFG protein

P005

Anti-wrinkle efficacy and safety of micro-spicule containing epidermal growth factor

Background: Microneedle patch recently have been used to increase skin permeability improving drug delivery and...