



The Skin Soothing Effect of Goji berry and Green tea fermentation

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Introduction:

Goji berry is a kind of wolfberry, and it has played an important part in traditional medicine in around Asia. The goji berry has been used to a wide range of ailments, because of great source of vitamins (A, C, E) and minerals. It has appeared anti-cancer, immune-enhancing activities and protective effect against oxidative damage. Green tea has been regarded as a healthful beverage, even medicine. Recently, green tea is considered as super cosmetic ingredient, since it has the significant biological effect: anti-oxidation, whitening, anti-aging and so on.

The *Saccharomyces cerevisiae* fermentation calling alcoholic fermentation can produce acetaldehyde, glycerol, formic, lactic, and acetic acid by utilizing glucose, mannose and fructose via Embden-Meyerhof pathway of glycolysis. Green tea natural ferment is well known drink by black tea and also, its *S.cerevisiae* fermentation beverage named 'Kombucha' has been emerged. However, the fermentation of goji berry and green tea extract combination has not been conducted and even the biological effect has no reports. Therefore, we investigated the efficacy of GGF by comparing non ferment of combination extracts.

Materials & Methods:

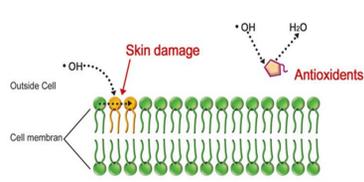
Natural Fermentation



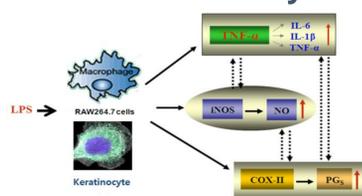
** GGF: Goji berry and Green tea Ferments
** GGNF: Goji berry and Green tea Non-Ferments

Efficacy

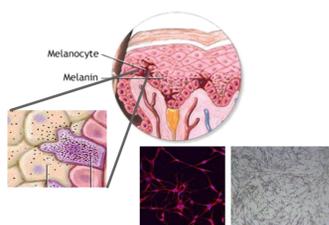
Anti-oxidant



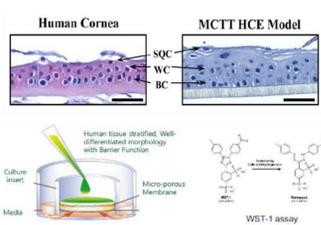
Anti-Inflammatory effect



Melanin content



Safety



Results & Discussion:

The Anti-oxidant activity of GGF

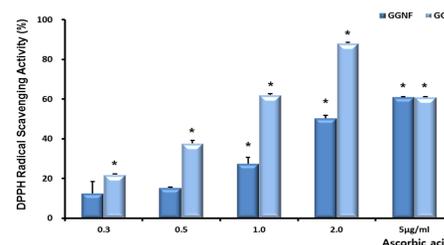


Fig.1. DPPH radical scavenging activity
The data represent the mean ± SD of triplicate experiments. *p < 0.01 compared with control group

GGF decreased intracellular melanin contents

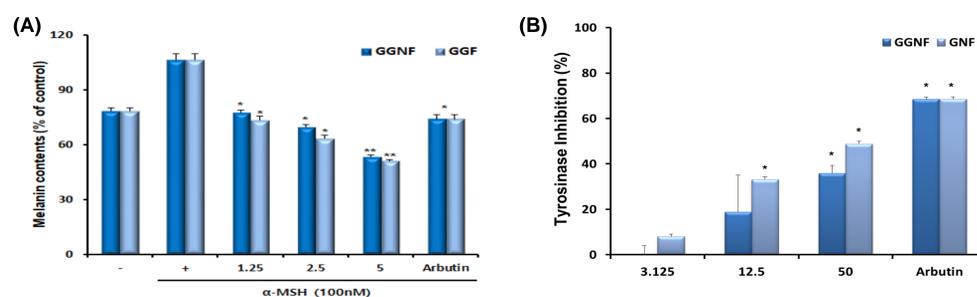


Figure 2. The Whitening Effect of GGF.
(A) Melanin contents. Data represent mean ± S.D. of triplicate experiments. *p < 0.05 compared with control group (B) Tyrosinase inhibition of GGF and GGNF. Data represent mean ± S.D. of triplicate experiments. *p < 0.05 compared with control group

GGF inhibits inflammatory response

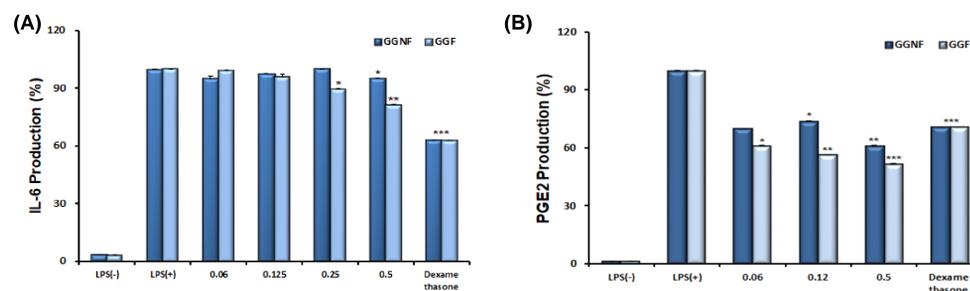
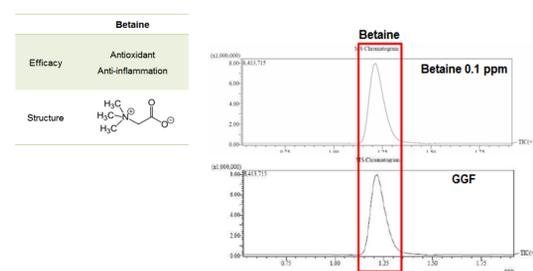
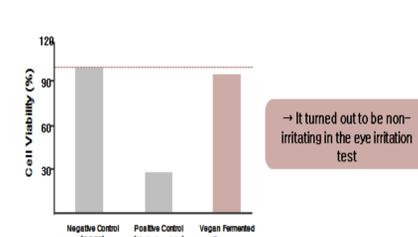


Figure 3. Anti-inflammatory effect of smart farm GGF.
IL-6 (A) and PGE2 (B) using ELISA kit. Data represent mean ± S.D. of triplicate experiments. *p < 0.05 compared with control group

Identification of Betaine in GGF



Eye irritation test



→ It turned out to be non-irritating in the eye irritation test.

Conclusions:

In conclusion, these results verified that GGF exhibited anti-oxidant, whitening effect, anti-inflammatory effects which were mediated by lowering NO, IL-6, PGE2 production. In addition, GGF included 19.7ppm of betaine. These findings suggest that GGF can play role as powerful cosmetic ingredient for skin soothing.

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