



skin|skin wise



guarana powder

Guarana—the antimicrobial antioxidant?

Consumer interest in botanical and natural products is significant, and it's here to stay. The trend influences manufacturers, producers and distributors in industries ranging from food to clothing, and of course beauty. In the realm of skin care products, botanicals are being researched and analyzed not only for their health properties, but also for their promise as alternatives to synthetic preservatives and stabilizers.

Recently, various studies have touted the benefits of guarana, not only as an antioxidant but also as a preservative.

Paullinia upana (guarana, pronounced gwa-ra-'naa) is a shrub or small tree in the order Sapindaceae that is native to Venezuela and northern Brazil, and is known for its high stimulant content. In the cosmetic industry, guarana seed extract has typically been used as an antioxidant and in cellulite treatments.

Acts as a stimulant

Guarana is present in a number of anti-cellulite products due to its ability to dissolve fat and increase blood flow by dilating blood vessels. In fact, guarana contains more caffeine than most other plants, including coffee. There are 4.5 grams of caffeine in 100 grams of the guarana fruit (Kobayashi-Hattori et al., 2005).

Studies have also found that guarana has significant antioxidant proper-

ties. It contains gallic acid, catechins and proanthocyanidins, all of which scavenge and neutralize reactive oxygen species including free radicals. More specifically,

To come to this conclusion, the researchers from the University of Maribor in Slovenia tested different solvents including water, acetone, methanol

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proanthocyanidins, typically called tannins, reduce the production of some of the worst oxidants, H₂O₂ or hydrogen peroxide (Gali-Muhtasib et al., 1999) and OH (Bors et al., 1999). Catechins inhibit the product of H₂O₂ induced by UV light (Wu et al., 2006). Finally, gallic acid also scavenges H₂O₂ (Lee et al., 2008).

Preserves

Guarana's preservation properties are also being extolled. Recently, a paper published by lead author Lucija Majhenic in the journal *Food Chemistry* suggested the following:

"Due to the high antioxidant, antibacterial and antifungal activities guarana seed extracts have promising potential as natural antioxidants in the food industries, in the preservation of foodstuffs against a range of food-related bacterial and fungal species or in the pharmaceutical and cosmetic industries."

and ethanol, to extract the antioxidant polyphenol content of guarana, which was then measured using the 2,2-diphenyl-1-picrylhydrazyl radical scavenging assay.

The room temperature extraction produced an extract with highest total phenol content of 181 milligrams of gallic acid equivalents, containing 29.4 milligrams of proanthocyanidins.

Majhenic and coworkers then tested the guarana seed extracts against three food-borne fungi: *Aspergillus niger*, *Trichoderma viride* and *Penicillium cyclopium*, and three health-damaging bacteria: *Escherichia coli*, *Pseudomonas fluorescens* and *Bacillus cereus*. The extracts obtained using the alcoholic solvents were found to display stronger antimicrobial activity against the micro-organisms, compared to the extracts obtained using water.

continues

The antioxidant properties of guarana are well established, as they have been extensively studied and supported by a variety of published papers.

The authors concluded that "Results presented here may suggest that seed extracts of guarana possess strong antimicrobial and antioxidant properties, and they can therefore be used as natural additives in the food, cosmetic and pharmaceutical industries."

Conclusions questionable

While the results of the study may seem promising, the fact that the guarana extracts in alcohol have a stronger antimicrobial activity than the guarana extracts in water raises an eyebrow. Alcohol itself is a strong antimicrobial, which

brings into question whether the true antimicrobial activity discussed here is more dependent on the solvent than on the actual plant extract.

The antioxidant properties of guarana are well established, as they have been extensively studied and supported by a variety of published papers. However, the plant's preservation properties remain to be confirmed. To date, no additional published studies on the antimicrobial activity of guarana exist. Given the questions raised by this first paper on the topic, further study seems necessary before coming to any definite conclusions. ■

Sources

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