

Grapefruit Seed Extract

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The ubiquitous and widespread usage of grapefruit seed extract (GSE) within the health food industry, including its use by supposedly knowledgeable practitioners, is an issue of serious concern for me as a herbalist, researcher and clinician. GSE in various forms is used by hundreds of thousands of consumers all over the world, all of whom praise the virtues of this “natural” antibiotic. In 1999 a study authored by Sakamoto, Sato, Maitani, and Yamada details an analysis of a commercially available GSE and compared this to an ethanol extract of grapefruit seeds (*Citrus paradisi*). The researchers report that two chemicals found in GSE and not in the ethanol extract were methyl-p-hydroxybenzoate and triclosan, two commonly used preservative compounds (Sakamoto). This study was followed up in 1999 by von Woedtke, Schluter, Pflugel, Lindequist and Julich, who analyzed the antimicrobial efficacy of six commercially available GSEs and one self-made extract from the seed and juiceless pulp of grapefruit (*Citrus paradisi*). The researchers found that five of the commercially available extracts had significant antimicrobial activities, all of which contained the preservative benzethonium chloride. Three of these same extracts were also found to contain the preservatives triclosan and methyl parabene. The researchers found that only one of the commercial GSEs tested had no preserving agent, but that this extract as well as the self-made extract had no antimicrobial activity. The researchers concluded that the antimicrobial activity being attributed to GSE is “...merely due to the synthetic preservative agents contained within”(von Woedtke).

While on the one hand the marketing of GSE could be nothing more than a kind of charlatanism, there are additional concerns about the long term safety of ingesting the aforementioned preservatives. I am quite sure that many of the people currently using GSE, who espouse the value of natural alternatives over commonly used synthetic drugs and spend their hard earned money to buy “all-natural” products, would be shocked to learn the mechanism of GSE’s biological activity.

Benzethonium chloride is commonly used as a disinfectant in cosmetic products. In Switzerland

benzethonium chloride is classified as a “...disinfectant categorized as a class 2 poison because of its teratogenicity and caustic effects” (kantonslabor-bs.ch). The amount found in some GSE products is upwards of 8% (Takeoka), considerably more than many cosmetic products. The Environmental Defense Fund describes benzethonium chloride as a “suspected endocrine toxicant” that “lacks...data required for safety assessment” (scorecard.org). According to the National Institute For Occupational Health and Safety the internal ingestion of benzethonium chloride could cause “...diarrhoea, nausea, vomiting, collapse, convulsions (and) coma” (cdc.gov). Some sources suggest that benzethonium chloride is a by-product produced from grapefruit flavonoids by ammoniation, but researchers at the USDA regard this as “unlikely” (Takeoka). Regardless of its origin, benzethonium chloride is clearly stated to be a potentially harmful compound, and is not approved for internal use in the United States.

Triclosan is structurally related to a number of bis-phenyl polychlorinated and bis-phenyl chlorophenol compounds that have come under increasing scrutiny for their health-damaging effects. Triclosan is listed by the Environmental Protection Agency (EPA) as a “pesticide” (epa.gov). It is widely used in the cosmetic industry, especially in antibiotic soaps, and has been fingered as a factor for the emergence of antibiotic-resistant bacteria (Braoudaki). Researchers are finding it in wastewater, in the tissues of fish, and even in human breast milk (Adolfsson-Erici). While triclosan is approved for use in topical and oral applications, it is not approved for internal use in the United States.

GSE is marketed as an all natural and perfectly safe health food product, when it is neither. Various Citrus species have been used as a food and medicine in Chinese and Ayurvedic medicine for thousands of years. Although being familiar with the many benefits of Citrus, neither Chinese nor Ayurvedic medicine has ever advocated the use of grapefruit seed or any other Citrus seed in acute infectious disease: this alone should provide some clue as to its effects or lack thereof.

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