

Specifically, if you have 10 ounces (284 g) grapefruit seeds, then you need 30 ounces (887 ml) liquid, of which 21 ounces (621 ml) will be vegetable glycerine and 9 ounces (266 ml) will be water. Add the liquid to the grapefruit seed and alcohol mixture, mix well, and let stand for 2 weeks. Decant, press the pulp well to extract any remaining moisture, and store in amber bottles out of the sun. This will produce an extract similar in taste and texture to a commercial preparation; however, I have been unable to determine whether it will have the same antibacterial activities as a commercial extract. All human dosages were developed from trial with the commercial extract, as were all antibacterial studies.

Note: GSE is extremely bitter. Nothing will mask its bitterness except citrus fruit drinks such as orange and grapefruit juice, lemonade, and limeade. As few as 5 drops in a 12-ounce (355 ml) glass of apple juice is unpleasantly bitter.

Commercial extract dosages: Extensive animal treatment has shown that high levels can be tolerated in the treatment of acute disease in farm stock. The usual dosage for humans is much smaller.

Animal dosages: Many animal trials have shown that in the treatment of diseases caused by viruses, parasites, bacteria, and fungi; 1 drop of extract per 2 pounds (1 kg) of body weight may be used. This amount is increased in especially acute conditions.

Internal use (human): 3 to 15 drops in citrus juice 2 to 3 times a day. In any disease condition, the minimum should be used and the dose only

Citrus Oil Antibacterial Activity

Though it has proved impossible to discover the process used to make commercial GSE, there is significant evidence that the grapefruit plant and all the citrus family possess potent antibacterial activity. A cursory reading of the literature shows reliable activity against *Staphylococcus*, *Salmonella*, *Pseudomonas*, and *Shigella* organisms from grapefruit, lemon, and lime: peel, seed, leaf, and essential oil. One of the most potent essential oils, used for broad-spectrum antibiotic action, is *Citrus bergamia*. (Called bergamot in common use, it is often confused with plants of the *Monarda* species.) The essential oils from citrus species are generally made from the peel or rinds of the fruit. All have shown strong antibacterial activity. The peels have historically been used as medicine throughout the world, in many instances for bacterial and amebic diseases.