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FILE: ■ Wintergreen (*Gaultheria procumbens*)
■ Aspirin Substitutes
■ Salicylates

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RE: Wintergreen (*Gaultheria procumbens*) A Rich Source of Salicylates

Ribnicky DM, Poulev A, Raskin I. The determination of salicylates in *Gaultheria procumbens* for use as a natural aspirin alternative. *Journal of Nutraceuticals, Functional & Medical Foods*. 2003;4(1):39-52.

Wintergreen (*Gaultheria procumbens*), also known as checkerberry or teaberry, is a small plant that grows predominantly in the northeastern North American forests. The essential oil of wintergreen is used as a flavoring agent. The essential oil contains predominantly methyl salicylate, an aspirin-like compound. Aspirin (acetylsalicylic acid) may be the most widely used drug in the world. Salicylic acid causes ulcers and intestinal bleeding. To reduce the side effects, salicylate acid was acetylated to become acetylsalicylic acid. Nonetheless, aspirin still causes gastric upset in some individuals. Wintergreen contains aspirin-like compounds but may have fewer side effects. This study assessed wintergreen as a natural alternative to aspirin.

The authors developed a method to analyze the amount of salicylic acid in plants. They compared wintergreen to English thyme (*Thymus vulgaris*), lemon thyme (*Thymus x citriodorus*), French thyme (*Thymus vulgaris*), lavender (*Lavandula angustifolia*; a.k.a. *L. officinalis*), rosemary (*Rosmarinus officinalis*), salal (*Gaultheria shallon*), and meadowsweet (*Filipendula ulmaria*). Black birch (*Betula lenta*) formerly a major commercial source of "wintergreen oil" due to its high methyl salicylate content was apparently not evaluated.

Compared to the other plants, wintergreen contained the highest concentration of salicylic acid. Compared to wild wintergreen, cultivated wintergreen contained twice the concentration of total salicylic acid. Growing conditions have a major effect on the concentration of methyl salicylate in the wintergreen plants. Wintergreen flowers had the highest concentration of salicylic acid and the berries had the lowest concentration. In the wintergreen plant, salicylate is present predominantly as a conjugate of methyl salicylate and glucose called gaultherin. Methyl salicylate can be released from gaultherin by

enzymes present naturally in humans. After the methyl salicylate is released, the methyl group can be removed by enzymes in the blood plasma. This allows salicylic acid to be released into the blood and provide a clinical effect. The authors hypothesize that gaultherin will cause less side effects by providing a time release form of salicylate that can pass the gastrointestinal barrier before being converted to salicylic acid.

The authors conclude that gaultherin, produced from wintergreen, may be a safer alternative to aspirin. Clinical studies are needed to confirm efficacy.

—*Heather S. Oliff, Ph.D.*

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