



## References

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## The Science Behind our Products

### Siberian ginseng (*Eleutherococcus senticosus*)

Siberian ginseng contains a unique array of biologically active constituents. The eleutherosides have been given the most attention and are believed responsible for the proposed adaptogenic activity. A study of middle-aged volunteers found Siberian ginseng significantly improved selective memory and subjective feeling of activity and well-being.<sup>1</sup> Another randomized trial discovered Siberian ginseng safely improves some aspects of mental health and social functioning in the elderly after 4 weeks of therapy.<sup>2</sup> Some ginseng experts claim that Siberian ginseng shows an aphrodisiac effect on animals and that it should have the same "invigorative" and tonic effect on people.<sup>3</sup>

### Rosemary (*Rosmarinus officinalis*)

Rosemary is native to Europe and is well-known as a general tonic and energizer. Promising research indicates ursolic acid, one of the major compounds found in rosemary, may be a natural and potent acetylcholinesterase inhibitor.<sup>4</sup> In addition, another compound carnosic acid, may promote the growth of a protein known as Nerve Growth Factor (NGF) which is vital for the development and maintenance of nerve tissue.<sup>5</sup> Considerable evidence from animal studies suggests that NGF may be useful in halting and slowing the progression of Alzheimer's disease-related cholinergic basal forebrain atrophy.<sup>6</sup> Administration of NGF has been found to reduce the degeneration of neurons and improve cognitive behavior in animals by stimulating central cholinergic neurons that are known to die during the development of the disease.<sup>7</sup> As a result, ursolic acid and carnosic acid have the potential to be effective and safe treatments for Alzheimer's disease.

### Borage (*Borago officinalis*)

Borage has importance among the medical and nutritional research community because it is the richest source of gamma-linolenic acid (GLA). A study in human volunteers found serum GLA values after ingestion of borage oil was three times higher than after evening primrose oil ingestion.<sup>8</sup> As a nutritional supplement, GLA has been reported to be efficacious in treating a number of health conditions. The human body can also manufacture its own supply of GLA from linoleic acid by way of the delta 6 fatty acid desaturase enzyme. However, in conditions with impaired activity of delta 6-desaturase, like in diabetes, atopic eczema or in normal aging,<sup>9,10</sup> supplementation with GLA becomes necessary in order to skip the metabolic conversion of linoleic acid to GLA. In one study of elderly women, supplementation with borage oil reduced dry, itchy skin and improved overall skin function.<sup>11</sup>



Furthermore, a recent study published in the British Journal of Nutrition found supplementing with borage oil for 12 weeks significantly increased skin hydration in a group of women.<sup>12</sup>

**Green oat (Avena sativa)**

Green oat preparations have traditionally been used to support mental health, cognitive function and energy levels since medieval times. A recent animal study indicates an extract of green oat may reduce stress and enhance learning.<sup>13</sup>



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