



## Elderberry D3fense

Stock #897-2 (90 capsules)

Elderberry D3fense provides important nutrients for optimal immune system function, particularly during the change of seasons—a time when both the immune and respiratory systems are often challenged. Elderberry D3fense contains nutrients that have been shown to support immune function and inhibit bacterial and viral infections such as colds and influenza (flu). Elderberry D3fense contains:

**Vitamin D** (Cholecalciferol, D3) is recognized for its profound effects on human immune function. Vitamin D acts as an immune system modulator, increasing the activity of macrophages (white blood cells that destroy bacteria) and providing anti-inflammatory effects. Vitamin D also dramatically stimulates the production of antimicrobial peptides (AMP) that play a crucial role in protecting the respiratory tract against infection and inhibit the function of the influenza virus. Recent research has discovered considerable evidence that influenza epidemics, and possibly even the common cold, occur as a result of seasonal deficiencies in AMP, secondary to seasonal deficiencies in vitamin D. Likewise,

epidemiologic studies suggest a correlation between vitamin D concentrations and the incidence of respiratory infections, including influenza. A prospective cohort study revealed that healthy individuals with higher concentrations of vitamin D demonstrated a significant two-fold reduction in the risk of developing acute respiratory tract infections, compared to those with lower levels of vitamin D. Higher vitamin D concentrations were also associated with a marked decrease in the percentages of days ill. Furthermore, results from a 3-year randomized, controlled trial found that women taking vitamin D were 3 times less likely to report cold and flu symptoms compared to those given a placebo. During the last year of the trial, higher dose vitamin D supplementation (2,000 IU daily) virtually eliminated all reports of colds and flu among study participants.<sup>1-5</sup>

**Elderberry** (*Sambucus nigra*) is primarily used as an antiviral agent to improve immunity against colds and influenza. Research suggests that taking elderberry at the first sign of a cold or flu may cut recovery time in half. For example, a randomized, double-blind, placebo-controlled study of patients with influenza A and B infections found that elderberry relieved flu-like symptoms an average of 4 days earlier compared to placebo. In addition, a recent study found that elderberry flavonoids inhibited human influenza A (H1N1) infection in vitro—the inhibitory action was likened to the anti-influenza activities of the antiviral drugs oseltamivir (Tamiflu) and amantadine. Furthermore, the German Commission E has approved elderberry for the treatment of colds and fevers.<sup>6-12</sup>

**Echinacea** (*Echinacea purpurea*) is notably the most recognized herbal supplement for preventing and treating colds and flu. Echinacea demonstrates antibacterial, antiviral and immunomodulating properties that have been shown to enhance innate and adaptive immune functions. Echinacea also helps reduce disease-producing waste material in the lymphatic system by stimulating macrophage activity—macrophages filter out and destroy foreign particles, bacteria and toxins in the lymph fluid. Clinical studies support the use of echinacea for preventing and treating colds, flus and upper respiratory infections, as well as increasing general immune system function. For example, a meta-analysis of 14 studies found that echinacea reduced the incidence of the common cold by 58% and the duration of cold symptoms by 1.4 days.<sup>6,7,13-19</sup>

**Willow bark** (*Salix alba*) - Derivatives of willow bark have been used since ancient times to treat a variety of aches, pains and fevers. Willow bark contains active ingredients, namely salicin and salicylate-like compounds, that exert analgesic (pain-relieving), anti-inflammatory and antipyretic (fever-reducing) effects. Salicin is considered chemically similar to aspirin (acetylsalicylic acid) and was originally used in the 1800s in the development of aspirin. Willow bark is still used today to treat pain, rheumatism and other systemic inflammatory disorders, as well as symptoms of colds and flu. Clinical trials have confirmed the effectiveness of willow bark for short-term relief of pain. However, willow bark is contraindicated in those with salicylate hypersensitivity.<sup>10,14,20-23</sup>

**Royal jelly** is a nutrient-rich substance that is secreted from the glands of worker bees and fed to the queen bee. Royal jelly contains a mixture of sugars, lipids (fats), vitamins and proteins that sustain the queen. Royal jelly has demonstrated antimicrobial, anti-inflammatory and wound healing effects, and has been used in humans to alter immunity and combat infectious diseases. For example, royal jelly contains glycoproteins that block cell adhesion factors produced by *Pseudomonas aeruginosa*, a bacteria that can cause opportunistic infections, including gastrointestinal, respiratory and urinary tract infections. Furthermore, clinical trials have shown that royal jelly's antimicrobial activity is approximately 75% as effective as penicillin, an antibiotic drug used for upper respiratory tract infections.<sup>10,24-28</sup>

**Olive leaf** (*Olea europaea*) contains phytochemicals that exert potent antioxidant, antimicrobial, anti-inflammatory and immunomodulatory activity. The active ingredients in olive leaf have been shown to be powerful in vitro inhibitors of

numerous viruses, including cold and influenza viruses. Research suggests that olive leaf constituents help reduce the infectivity and inhibit the replication of viruses that cause colds, influenza and lower respiratory tract infections. Olive leaf has also been shown to enhance phagocytosis, a process that stimulates the immune response against viral infection. Although clinical trials have yet to be conducted, numerous reports indicate that olive leaf can prevent and/or shorten the duration of colds and flus when taken at the onset of symptoms. In addition to its antiviral activity, olive leaf inhibits many gram-negative and gram-positive bacteria, yeast and parasites.<sup>6,14,29-31</sup>

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