

**Name of Herb:** Astragalus<sup>1</sup>, Radix Astragali, <sup>2</sup> Family Names: Leguminosae, Fabaceae <sup>1</sup>

**Scientific Names:** *Astragalus membranaceus* Bunge, *Astragalus mongholicus* Bunge<sup>1</sup>

**Common Names:** Astragalus, huang-chi, huangqi, huángqi, membranous milkvetch, milkvetch, neimeng huangqi, oqi, ouqi<sup>2</sup> and hwanggi<sup>3</sup>

**Description of Active Ingredients:** Saponins (Astragalosides I-X), <sup>1,3,4</sup> several flavonoids, polysaccharides, triterpenes,<sup>3</sup> multiple trace minerals, amino acids, and coumarins. <sup>1,2,3</sup>

**Mechanism of Action:** Astragalus is an antioxidant<sup>1</sup> and has been shown to promote cell proliferation and survival.<sup>3</sup> It inhibits free radical production, increases superoxide dismutase and decreases lipid peroxidation. It is thought to improve the immune response by potentiating the effects of interferon and it has been confirmed to enhance the immune system in *in vitro* and *in vivo* investigations. <sup>2</sup> Astragalus also seems to increase antibody levels of IgA and IgG in nasal secretions. <sup>1,2</sup>

Astragalus is thought to be beneficial in cardiac disease by causing vasodilation and increased cardiac output.<sup>1</sup> Alcohol extracts of astragalus have been shown to enhance cardiac contractility and contraction amplitude in animal studies.<sup>2</sup> Saponins isolated from Astragalus have been shown to have inotropic effects which are thought to work through modulation of Na<sup>+</sup>/K<sup>+</sup>-exchanging ATPase.<sup>2</sup>

**Current Indications or Efficacy:** Astragalus is an adaptogen and is usually used in combination with other herbs, for example, ginseng, echinacea and glossy privet.<sup>5</sup> Astragalus is primarily used in American medicine to potentiate the function of the immune system and in cardiovascular disease. In traditional Chinese medicine it is used for influenza and the common cold.<sup>3</sup>

There is evidence that the adjunctive use of Astragalus in combination with glossy privet can increase survival rates in patients being treated with chemotherapy and radiation for breast or lung cancer by increasing immune function through suppression of T-cell function.<sup>5</sup> The combination of Astragalus and glossy privet was shown to potentiate the activity of recombinant interleukin-2 (rIL-2) and reduce its adverse toxicities, for example, acute renal failure, MI and fluid retention,<sup>3,4</sup> however there is limited scientific evidence to verify this.<sup>5</sup>

There is limited evidence that the IV use of Astragalus can be beneficial for patients with cardiac disease; Astragalus has been studied for its efficacy in ischemic heart disease, angina, myocardial infarction and heart failure.<sup>5</sup> In one study, 92 patients with angina showed improvements in their symptoms when treated with Astragalus as well as objective improvement in ECG ( $p < 0.05$ ) when compared to control patients.<sup>5</sup> In another small study, Astragalus was shown to improve left ventricular activity, end-systolic and end-diastolic volume with 79% of the 19 patients experiencing relief of chest pain and dyspnea.<sup>4</sup>

Research of primary literature illustrates that there will need to be larger, controlled, clinical trials to provide reliable scientific evidence to support claims that Astragalus is beneficial as an adjunct in cardiac and cancer treatment.

**Contraindications/allergies:** Pregnancy and Lactation due to insufficient information.<sup>1,2</sup> Auto-immune disorders because it may increase immune system activity.<sup>1</sup> Organ transplant patients because it might interfere with immunosuppressive therapy.<sup>1</sup>

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**Dosage forms, recommended doses, duration:** Oral: Astragalus powder 1-30 grams per day. Prevention of common cold: 4-7 g/d. Astragalus decoction 0.5-1L per day (max of 120 g of whole root per liter of water) has been used. As a soup, mix 30 g in 3.5L of soup and simmer with other food ingredients.<sup>1,2</sup>

**Drug Interactions and Drug-disease interactions:** Immunosuppressants: Avoid concurrent use with meds such as cyclophosphamide, azathioprine, basiliximab, cyclosporine, daclizumab, muromonab-CD3, mycophenolate, tacrolimus, sirolimus, prednisone and other corticosteroids.<sup>1,6</sup> Anticoagulants: ASA, NSAIDs, clopidogrel, warfarin<sup>6</sup>  
Interactions with diseases or conditions: Auto-immune disorders and organ transplant recipients.<sup>2</sup>

### **References:**

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2. WHO monographs on selected medicinal plants. WHO website. Available at: <http://www.who.int/medicines/library/trm/medicinalplants/monographs.shtml>. Accessed March 8, 2003.
3. McKenna DJ, Hughes K and Jones K. Astragalus. Altern Ther Health Med 2002 Nov/Dec; 8 (6) 34-40
4. Miller AL. Botanical influences on cardiovascular disease. Available at: <http://www.thorne.com/altmedrev/.fulltext/3/6/422.html>. Accessed March 11, 2003.
5. Sinclair S. Chinese herbs: a clinical review of astragalus, ligusticum, and schizandrae. Available at: <http://www.thorne.com/altmedrev/.fulltext/3/5/338.html>. Accessed March 11, 2003.
6. Abt L & Hammerly M (Eds): AltCareDex® System. MICROMEDEX, Greenwood Village, Colorado (Edition expires [03/2003]).