Selected Herbs for Prevention and Treatment of Upper Respiratory Track Herbs

Christopher Hobbs, Ph.D., L.Ac., A.H.G.

Berberine

Berberine is a plant-alkaloid with a long history of medicinal use in Chinese and Ayurvedic medicine. Berberine has shown anti-microbial activity against bacteria, viruses, fungi, protozoans, and worms.[1] Because of it's broad-spectrum antibiotic activity, it is widely used for preventing many kinds of infections.[2] There is some clinical evidence to support berberine's use in the treatment of eye infections[3] and bacterial diarrhea. [4,5]

In one recent study (Cecil *et al*., 2011), berberine and goldenseal extract both strongly inhibited influenza A growth and maturation, and in another study, inhibited influenza viral growth both *in vitro* and *in vitro* through a variety of immune mechanisms (Wu *et al*., 2011).

Andrographis

One of the most credible antiviral herbs based on several human clinical trials against upper respiratory tract infections, for reducing the severity of signs/symptoms, especially sore throat,[6] as well as expectoration, nasal discharge, headache, fever, sore throat, earache, malaise/fatigue and sleep disturbance (Saxena *et* al., 2010). Also effective for relieving symptoms of pharyngotonsillitis.[7] A meta-analysis on andrographis for treating upper respiratory tract infections stated: "Collectively, the data suggest that *A. paniculata* is superior to placebo in alleviating the subjective symptoms of uncomplicated upper respiratory tract infection. There is also preliminary evidence of a preventative effect. Adverse events reported following administration of *A. paniculata* were generally mild and infrequent".[8] Another meta-analysis in 2004 concluded that "Current evidence suggests that *A. paniculata* extract alone or in combination with *A. senticosus* extract may be more effective than placebo and may be an appropriate alternative treatment of uncomplicated acute upper respiratory tract infection."[9]

Elderberry

In laboratory and animal research, *S. nigra* had antiviral effects, , inhibiting replication of several strains of influenza A and B.[10] The mechanism is believed to be rendering viruses nonfunctional by staining and coating them. According to a review, *in vitro* and animal research reported that elderberry fruit

---

[1] Gibbs, Peter J., and Kenneth R. Seddon. "Berberine." *Alternative Medicine Review* 5.2 (2000): 175-7.

[2] Scazzocchio F, Cometa MF, Tomassini L, Palmery M. Antibacterial Activity of *Hydrastis canadensis* Extract and its Major Isolated Alkaloids. *Planta med* 2001; 67: 561-564.

[3] Mohan, M., et al. "Berberine in trachoma." *Indian journal of ophthalmology* 30.2 (1982): 69.

[4] Khin-Maung-U, Myo-Khin, and Aye-Kyaw Nyunt-Nyunt-Wai. "Clinical trial of berberine in acute watery diarrhoea." *British Medical Journal (Clinical research ed.)* 291.6509 (1985): 1601.

[5] Khin-Maung-U, Myo-Khin, and Aye-Kyaw Nyunt-Nyunt-Wai. "Clinical trial of berberine in acute watery diarrhoea." *British Medical Journal (Clinical research ed.)* 291.6509 (1985): 1601.

[6] Melchior J, Spasov AA, Ostrovskij OV, Bulanov AE, Wikman G. 2000. Double-blind, placebo-controlled pilot and phase III study of activity of standardized Andrographis paniculata Herba Nees extract fixed combination (Kan jang) in the treatment of uncomplicated upper-respiratory tract infection. Phytomedicine 7(5):341-50.

[7] Thamlikitkul V, Dechatiwongse T, Theerapong S, Chantrakul C, Boonroj P, Punkrut W, Ekpalakorn W, Boontaeng N, Taechaiya S, Petcharoen S, et al. 1991. Efficacy of Andrographis paniculata, Nees for pharyngotonsillitis in adults. *J Med Assoc Thai.* 74(10):437-42.

[8] Joanna Thompson Coon[1], Edzard Ernst. 2004. *Andrographis paniculata* in the Treatment of Upper Respiratory Tract Infections: A Systematic Review of Safety and Efficacy. *Planta med* 70: 293-298.

[9] Poolsup N, Suthisisang C, Prathanturarug S, Asawamekin A, Chanchareon U. 2004. *Andrographis paniculata* in the symptomatic treatment of uncomplicated upper respiratory tract infection: systematic review of randomized controlled trials. *Journal of Clinical Pharmacy & Therapeutics* 29 (1): 37-45(9).

[10] Zakay-Rones, Z., Varsano, N., Zlotnik, M., Manor, O., Regev, L., Schlesinger, M., and Mumcuoglu, M. Inhibition of several strains of influenza virus in vitro and reduction of symptoms by an elderberry extract (Sambucus nigra L.) during an outbreak of influenza B Panama. J Altern Complement Med 1995;1(4):361-369.

(*Sambuci* fructus) had an effect on influenza, other viral infections, and increased antibody titers.[11] Human studies reported the efficacy of elderberry extract for slowing viral replication and earlier relief of flu-like symptoms.[12]
A number of recent studies have emphasized the effectiveness of elderberry water-based extracts and juice *in vitro* in antioxidant assays such as free-radical scavenging activity and inhibition of β-carotene/linoleic acid co-oxidation (Duymus *et al*., 2014).

Echinacea
Echinacea is one of the most widely-utilized traditional herbal medicines for easing and shortening symptoms of common respiratory tract infections, and is best known for its effect on mobilizing/stimulating the immune system. Ritchie *et al*. (2011) performed an ex vivo study, showing that a stabilized juice preparation of *E. purpurea* demonstrated adapted immune-modulation, particularly on acute-phase imunomodulatory proteins such as IL1-β, IL-6, IL-12 and TNF-α.
Oral preparations have been used traditionally for the prevention and treatment of upper respiratory tract infections or the common cold. According to a review, the combination of components that may be isolated from echinacea through extraction may have antiviral, antimicrobial, and immune-modulatory activity when administered at noncytotoxic concentrations.[13]
Numerous clinical trials have been performed on various extracts of several Echinacea species for respiratory tract infections, and these studies have had variable outcomes, with some reporting no benefits (Turner *et al*., 2005), but others reporting benefits like shortened duration and severity of symptoms (Linde *et al*., 2006). Early use of echinacea preparations at the first signs of infections, and increased doses appear to be more effective (Schoop *et al*., 2006), and safety has been supported in children (Saunders *et al*., 2007).
Echinacea preparations don't appear to interact significantly with conventional drugs (Modarai *et al*., 2011).

---

[11] Vlachojannis, J. E., Cameron, M., and Chrubasik, S. A systematic review on the sambuci fructus effect and efficacy profiles. Phytother.Res. 2010;24(1):1-8
[12] Zakay-Rones Z, Thom E, Wollan T, Wadstein J. 2004. Randomized study of the efficacy and safety of oral elderberry extract in the treatment of influenza A and B virus infections. J Int Med Res. 2004 Mar-Apr;32(2):132-40.
[13] Hudson, James B. "Applications of the phytomedicine Echinacea purpurea (purple coneflower) in infectious diseases." *BioMed Research International* 2012 (2011).

Additional References

Cecil CE1, Davis JM, Cech NB, Laster SM. 2011. Inhibition of H1N1 influenza A virus growth and induction of inflammatory mediators by the isoquinoline alkaloid berberine and extracts of goldenseal (Hydrastis canadensis). *Int Immunopharmacol.* 2011 Nov;11(11):1706-14. doi: 10.1016/j.intimp.2011.06.002. Epub 2011 Jun 16.

Wu Y1, Li JQ, Kim YJ, Wu J, Wang Q, Hao Y. 2011. In vivo and in vitro antiviral effects of berberine on influenza virus. *Chin J Integr Med*. 2011 Jun;17(6):444-52. doi: 10.1007/s11655-011-0640-3. Epub 2011 Jun 10.

Saxena RC, Singh R, Kumar P, Yadav SC, Negi MP, Saxena VS, Joshua AJ, Vijayabalaji V, Goudar KS, Venkateshwarlu K, Amit A. 2009. A randomized double blind placebo controlled clinical evaluation of extract of Andrographis paniculata (KalmCold) in patients with uncomplicated upper respiratory tract infection. *Phytomedicine.* 2010 Mar;17(3-4):178-85. doi: 10.1016/j.phymed.2009.12.001. Epub 2010 Jan 25.

Duymuş HG1, Göger F2, Başer KH3. 2014. In vitro antioxidant properties and anthocyanin compositions of elderberry extracts. *Food Chem.* 2014 Jul 15;155:112-9. doi: 10.1016/j.foodchem.2014.01.028. Epub 2014 Jan 23.

Ritchie MR1, Gertsch J, Klein P, Schoop R. 2011. Effects of Echinaforce® treatment on ex vivo-stimulated blood cells. *Phytomedicine*. 2011 Jul 15;18(10):826-31. doi: 10.1016/j.phymed.2011.05.011.

Turner RB, Bauer R, Woelkart K, Hulsey TC, Gangemi JD. 2005. An evaluation of Echinacea angustifolia in experimental rhinovirus infections. *N Engl J Med.* 2005 Jul 28;353(4):341-8.

Linde K, Barrett B, Wölkart K, Bauer R, Melchart D. 2006. Echinacea for preventing and treating the common cold. *Cochrane Database Syst Rev.* 2006 Jan 25;(1):CD000530. Review. Update in: Cochrane Database Syst Rev.

Schoop R, Klein P, Suter A, Johnston SL. 2006. Echinacea in the prevention of induced rhinovirus colds: a meta-analysis. *Clin Ther*. 2006 Feb;28(2):174-83. Review.

Saunders PR1, Smith F, Schusky RW. 2007. Echinacea purpurea L. in children: safety, tolerability, compliance, and clinical effectiveness in upper respiratory tract infections. *Can J Physiol Pharmacol*. 2007 Nov;85(11):1195-9.

Modarai M, Silva E, Suter A, Heinrich M, Kortenkamp A. 2011. Safety of Herbal Medicinal Products: Echinacea and Selected Alkylamides Do Not Induce CYP3A4 mRNA Expression. *Evid Based Complement Alternat Med.* 2011;2011:213021. doi: 10.1093/ecam/nep174. Epub 2010 Sep 15.