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FILE: ■ Belladonna (*Atropa belladonna*)
■ Natural Standard Review

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RE: Natural Standard Review of Belladonna

Ulbricht C, Basch E, Hammerness P, Vora M, Wylie John Jr, Woods J. An evidence-based systematic review of belladonna by the Natural Standard Research Collaboration. *Journal of Herbal Pharmacotherapy*. 2004;4(4):61-90.

Natural Standard is an international research collaboration that aggregates and synthesizes data on complementary and alternative therapies. Founded by clinicians and researchers, it provides evidence-based information about complementary and alternative therapies. In this article, the authors present a review of the herb belladonna (*Atropa belladonna*).

Belladonna has been used for centuries for various indications, including headache, menstrual symptoms, peptic ulcer disease, inflammation, and motion sickness. It contains active agents with anticholinergic properties, such as the tropane alkaloids atropine, hyoscyne (scopolamine), and hyoscyamine.

In its review, the National Standard Research Collaboration assigns grades that reflect the level of available scientific evidence in support of the efficacy of a given therapy for a specific indication. Grades range from "A" (Strong Scientific Evidence); "B" (Good Scientific Evidence); "C" (Unclear or Conflicting Scientific Evidence); "D" (Fair Negative Scientific Evidence); to "F" (Strong Negative Scientific Evidence). The following grades were assigned for these common uses of belladonna:

Irritable bowel syndrome	C	Otitis media	C
Airway obstruction	C	Premenstrual syndrome	C
Autonomic nervous system disturbances	C	Radiodermatitis	C
Headache	C	Menopausal symptoms	D

To support these rankings, the authors discuss the scientific evidence available regarding the efficacy of belladonna for specific indications. For irritable bowel syndrome, the authors found only limited controlled trials of the herb in combination with phenobarbital in heterogeneous samples and one study showing a trend toward improved symptoms in

patients treated with the belladonna constituent hyoscine (scopolamine). Therefore, say the authors, "there is currently insufficient evidence to recommend belladonna as a monotherapy for the treatment of irritable bowel syndrome."

For prevention of airway obstruction, the authors found only limited human research but did cite one study that demonstrated a beneficial effect of the herb in the treatment of airway obstruction in infants who were sleeping. However, because of a lack of other controlled trials, they noted insufficient evidence to recommend belladonna for the prevention of airway obstruction.

The literature review revealed limited evidence regarding the use of belladonna to treat symptoms associated with autonomic nervous system dysfunction.

Studies comparing belladonna-containing compounds with placebo in the treatment of headache have been small and have reported limited or no benefits. According to the authors, the studies have been of poor quality and have examined combination products containing other agents such as ergotamine or phenobarbital or have used homeopathic belladonna preparations. Again, the report noted insufficient evidence to support the use of belladonna.

Insufficient evidence was reported to support the herb's use for the treatment of otitis media, for the alleviation of menopausal symptoms, and for the management of radiodermatitis.

One controlled human trial using Bellergal[®] (a combination formula containing 40 mg Phenobarbital, 0.6 mg ergotamine tartrate, and 0.2 mg levorotatory alkaloids of belladonna; Note: Bellergal is no longer available, however generic formulations of the same combination are available.) reported decreased symptoms associated with premenstrual syndrome, including fatigue, breast tenderness, and irritability. "Further study is warranted before an evidence-based recommendation can be made," says the report.

In a brief safety summary, the collaboration states that belladonna is *possibly safe* when taken by healthy persons in recommended doses for a short duration or when taken in homeopathic dilutions; *possibly unsafe* when taken by persons with medical conditions such as congestive heart failure, hypertension, coronary artery disease, cardiac arrhythmias, constipation, partial or complete bowel obstruction, narrow-angle glaucoma, prostatic obstruction, myasthenia gravis, or urinary retention; and *likely unsafe* when taken in large doses by children or adults, when taken by breastfeeding or pregnant women, and when taken with other agents that possess anticholinergic properties.

The report details the traditional dosing and homeopathic dosing of belladonna preparations (both oral and topical applications) for both adults and children. In addition, it reviews case reports of belladonna toxicity and warns that "belladonna overdose should be considered serious and should be treated by qualified medical professionals."

Reported general adverse effects associated with belladonna include dry mouth, urinary retention, flushing, papillary dilation, constipation, and confusion. Adverse dermatologic effects include redness and dryness of the skin, and in some instances, rash and hives.

Reported neurologic effects include headache, excitement, agitation, dizziness, lightheadedness, drowsiness, unsteadiness, confusion, hallucinations, slurred speech, sedation, hyperreflexia, convulsions, vertigo, and coma. Among the cardiovascular adverse events are tachycardia, hypertension, and ventricular premature beats. Also listed in the report are ocular, psychiatric, respiratory, gastrointestinal, genitourinary, endocrine, and musculoskeletal adverse effects of the herb, as well as precautions, warnings, and contraindications.

Additionally, the authors report on belladonna/drug interactions and belladonna/herb/supplement interactions, but found insufficient available evidence to report any food or lab interactions.

—*Shari Henson*

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