



# BLACK COHOSH

*(Actaea racemosa L [formerly Cimicifuga racemosa])*

**Family:** Ranunculaceae,

**Synonyms:** Black snakeroot, rattleroot,<sup>1</sup> bugbane, bugwort, squaw root,<sup>2</sup> snakeroot, rattleweed, baneberry, Cimicifuga,<sup>3</sup> richweed, Amerikanisches wanzenkraut, actee a grappes, herbe au punaise.<sup>4</sup>

**Not to be confused with Blue cohosh or white cohosh<sup>3</sup>**

## Key Clinical Points

- ❖ Black cohosh is a good choice for treating mild hot flashes in women who wish to avoid hormone replacement therapy.
- ❖ Scientific validation of traditional uses for joint symptoms is pending.
- ❖ Avoid in patients with estrogen-sensitive tumors until its estrogenic properties are better understood.

## Key Constituents and pharmacology

**The rhizome and root are used medicinally.** Active constituents include phytosterin, isoferulic acid, fukinolic acid, caffeic acid, salicylic acid, sugars, tannins, long-chain fatty acids, and triterpene glycosides: acetin, cimicifugoside, and 27-deoxyactein (recently renamed 26-deoxyactein).<sup>3</sup> Currently researchers feel that the triterpene glycoside fraction is the most active constituent.<sup>5</sup>

In a small (n=7) study of the urine of post-menopausal women who ingested single doses of black cohosh, the quinoid metabolites from the following were detected: fukinolic acid, fukiic acid, caffeic acid, and cimracemate B, with additional quinoid metabolites from hydroxytyrosol and dihydroxyphenyl lactic acid. No potentially toxic mercapturate metabolites were detected, suggesting that reactive electrophilic metabolites are not produced in vivo.<sup>6</sup> However, concomitant use of drugs that deplete hepatic glutathione might account for occasional reports of black cohosh hepatotoxicity.

Some controversy exists regarding the estrogenic activity of black cohosh. Part of the confusion may result from the recent finding of two different estrogen receptors.<sup>7</sup> Animal studies (chiefly in ovariectomized rats) show some effects suggesting estrogenic activity including transient suppression of LH.<sup>7</sup> In the most recent study, the researchers demonstrated inhibition of LH and partial reduction in bone mass loss in ovariectomized rats.<sup>8</sup> Other animal studies also suggest that black cohosh inhibits parathyroid-hormone-induced bone absorption.<sup>7</sup> Pharmacological effects of black cohosh in pregnancy remain unclear.<sup>7</sup> Some of the constituents of black cohosh appear to have anti-inflammatory effects in rats.<sup>7</sup> Antagonist and partial agonist activity at 5-HT<sub>1D</sub>, 5-HT<sub>1B</sub>, and 5-HT<sub>7</sub> serotonin receptors may be responsible for alleviating menopausal symptoms, similar to SSRI antidepressants often prescribed for this indication.

In post-menopausal women, higher doses of black cohosh appeared to inhibit LH secretion, but no sustained effect on LH levels was seen at standard doses.<sup>7</sup> In vitro, black cohosh inhibits the stimulation of estrogen-dependent breast cancer cells and appears to have a synergistic effect when given concomitantly with tamoxifen.<sup>9</sup> However, the authors provided no causal data to suggest that black cohosh acted as an anti-estrogen; such high, non-physiological concentrations were used that the extracts were likely to be non-specifically cytotoxic via mechanisms not involving estrogen receptors.

**Herbal properties:** antispasmodic, emmenagogue, antirheumatic, diaphoretic, sedative, nervine, and alterative,<sup>1,10,11</sup> with aphrodisiac, antitussive, and expectorant properties.<sup>12</sup>

History and traditional use	Indications supported by clinical trials
<p>Native Americans used black cohosh for relieving pain during menstruation and child birth.<sup>13</sup> In addition, they found it useful for rheumatism, malaise, kidney ailments, malaria, sore throat, and snakebite.<sup>3,14</sup> Cimicifuga comes from the Latin “to drive away” and reflects some of the common names of the herb: “bugbane” and “bugwort”.<sup>13</sup> Black cohosh remained popular among the early European settlers and became a component of the famous Lydia Pinkham’s Vegetable Compound, a patent medicine of the 19<sup>th</sup> century for menstrual stress and nervous tension.<sup>14</sup> The Eclectic Physicians of the time prescribed black cohosh for treatment of rheumatism.<sup>14</sup> More recently, women have used black cohosh for treatment of menopausal symptoms, including hot flashes, joint aches, and neurovegetative symptoms.<sup>3</sup> Black cohosh is taken to treat PMS, dysmenorrhea,<sup>15</sup> osteoarthritis,<sup>16</sup> menstrual migraine,<sup>17</sup> and rheumatoid arthritis.<sup>18</sup> Over 2 million women worldwide use the herb.<sup>19</sup></p> <p><b>The North American Menopause Society recommends black cohosh for mild hot flashes.</b><sup>20</sup></p> <p>Black cohosh achieved special prominence as a “partus preparator”, given to women in the last 4 weeks of pregnancy to aid in childbirth.<sup>7</sup></p> <p><b>Preparation and Dosage:</b> Black cohosh is prepared as an alcohol tincture (40-60% ethanol) from the fresh root.<sup>7</sup></p> <p>Herbalists prescribe:</p> <ul style="list-style-type: none"> <li>• Tincture (1:5 in 60% ethanol): 2-4 ml TID</li> <li>• Fluid extract (1:1 in 90% ethanol): 0.3-1.8 ml TID</li> <li>• Tea (decoction): 1 tsp. of the root simmered 15 minutes in 1 cup of water, three times daily.<sup>1,11,21</sup></li> </ul> <p>Native Americans applied the macerated root externally for snake bites.<sup>13</sup></p> <p>Of the modern formulas, Remifemin (<i>GlaxoSmithKline</i>) is the most commonly used, usually at 20-40 mg (1-2 capsules; each standardized to 1 mg triterpene glycosides expressed as 26-deoxyactein) BID<sup>14</sup> with 4-12 weeks before clinical effect seen.<sup>22</sup></p>	<p><b>Effectiveness for treatment of menopausal symptoms: possible.</b></p> <p>Multiple clinical studies of symptomatic menopausal women have demonstrated significant reductions in symptoms with black cohosh treatment.<sup>23-32</sup> (5 open, uncontrolled designs, with 6 randomized, controlled or comparison studies).<sup>22</sup> In some studies, black cohosh was as effective at reducing these types of symptoms as estrogen compounds.<sup>7</sup> Additional studies of black cohosh in combination with other dietary supplements ( St. John’s Wort in one study,<sup>7</sup> green tea, <i>Panax ginseng</i>, soy extract, valerian, kava, and hops in another), have shown similar degrees of efficacy.</p> <p><b>Effectiveness for other gynecologic indications: uncertain.</b> No clinical trials have looked specifically at the effectiveness of black cohosh in treating PMS.<sup>33</sup> In addition, the herb’s use for dysmenorrhea, though approved by the German Commission E, has not been confirmed by rigorous clinical studies.<sup>34</sup></p> <p><b>Effectiveness for treating menstrual migraine: uncertain.</b> In one randomized, placebo-controlled study, Burke et al. evaluated the effects of a combination of soy, dong quai, and black cohosh on migraine frequency, duration, and intensity on days 2 to 3 of the menstrual cycle.<sup>17</sup> The study revealed a small, but significant improvement in mean headache severity scores in the treatment group.<sup>17</sup> Further studies are needed to confirm this effect.</p> <p><b>Effectiveness for enhancing the effects of tamoxifen for breast cancer: uncertain.</b> Nesselhut found that supraphysiological concentrations of black cohosh blocks estrogen stimulation of breast cancer cells in vitro. When given with tamoxifen, the effects were greater than with either substance alone.<sup>7</sup> However, these studies were not replicated with an ER-negative cell line, raising the possibility of a non-specific, cytotoxic effect. No clinical studies have yet been done.</p> <p><b>Effectiveness for treating joint symptoms: uncertain.</b></p> <p>One study, which looked at Rheumalex (Willow bark, Guaiacum resin, Black Cohosh, Sarsaparilla, and Poplar bark) for pain relief in patients with RA and OA showed small, but statistically significant results with higher levels of improvement in the RA group.<sup>35</sup></p>

Interactions with other herbs, pharmaceuticals, disease states	Adverse effects/precautions/side effects/contraindications
<p><b>Interactions with pharmaceuticals:</b> May possibly increase the toxicity of docetaxel (Taxotere) and doxorubicin (Adriamycin); currently unclear whether toxicity is increased to normal tissues as well.<sup>3</sup> May have additive effect on the estrogen-receptor antagonist activity of tamoxifen but highly unlikely at physiologically achievable concentrations.<sup>7</sup></p> <p><b>Interactions with other herbs:</b> None known. Herbalists often give black cohosh in combination with other herbs thought to have an effect on the female hormonal system, such as Dong quai (<i>Angelica sinensis</i>), wild yam (<i>Dioscorea villosa</i>), and Chasteberry (<i>Vitex agnus-castus</i>).</p> <p><b>Precautions/contraindications:</b> Not recommended for pregnant or nursing women or for children, due to lack of safety data in these groups.<sup>3,4</sup></p> <p>Persons with known liver disease <i>should probably avoid black cohosh</i> (see adverse events). Physicians should use caution in patients with breast cancer. Studies have shown conflicting results, with one trial suggesting that black cohosh increases the incidence of breast cancer metastasis in the MMTV-neu mouse model, but no increase in primary tumor incidence.<sup>3</sup></p>	<p><b>Side effects:</b> mild gastric symptoms most commonly, with vomiting, and/or dizziness at higher doses.<sup>34</sup> Headaches, weight gain,<sup>36</sup> breathlessness, malaise, rash, hot flushes rarely reported as well.<sup>15</sup></p> <p><b>Adverse events:</b> seven cases of liver toxicity have been reported in Australia including liver failure requiring transplant.<sup>37</sup> It is not possible to ascribe the liver toxicity to black cohosh as most of the patients were taking multi-herb preparations at the time of developing symptoms,<sup>38</sup> though one case was associated with Remifemin plus other medications.<sup>15</sup> In most of the Australian cases, no assay of the herbal preparation was performed to exclude contaminants as a cause<sup>38</sup> and other etiologies of liver disease were not definitively ruled out.<sup>39</sup> In the UK, black cohosh has possibly been associated with thrombosis, bradycardia, and hypertension, though again, causality is unclear.<sup>15</sup></p> <p>One case of seizures was reported in a 34 year old woman taking black cohosh for unknown reasons.<sup>15</sup> In another case, an infant whose mother had taken unknown quantities of black and blue cohosh at 42 weeks developed seizures and respiratory distress.<sup>3</sup></p> <p>Teratogenicity, mutagenicity, and carcinogenicity studies are reportedly negative.<sup>3</sup></p>
<p><b>Botanical characteristics</b></p>	
<p>Black cohosh is a member of the buttercup family, a native of eastern North America.<sup>40</sup> It grows in upland woods and hillsides with a 3-9 foot stem and irregular divided leaves with a terminal 3-lobed leaflet, middle lobe largest.<sup>13,19</sup> It has small, fragrant white flowers with very long spikes from May through August.<sup>13,19,41</sup></p> <p>Farmers may be able to grow black cohosh in the sun in cooler climates with adequate moisture,<sup>41</sup> though it benefits from light shade. In the southern US, it prefers light shade, high humidity, and regular watering.<sup>41</sup> Propagate by division of the rhizome in spring or fall or by seed.<sup>41</sup> Harvest 3-5 years after planting in the fall or early spring.<sup>21,41</sup></p>	

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