



Black Cohosh

Actaea/Cimifuga racemosa

Common names

Baneberry, black snakeroot, rattleroot, squawroot, sheng ma

Family

Ranunculaceae (buttercup)

Part used

Root and rhizome

Background and traditional uses

Black cohosh is a perennial herb native to the eastern United States. It grows between 1-2.5m tall with compound, pinnate leaves around 7cm long and blooms with inflorescences of white flowers appearing as long racemes with abundant stamens.¹ Black cohosh has a thick, knotted rhizome system¹ and the hard, dark brown, starchy roots and rhizomes have a strong history of medicinal use in Native American traditions.²

Throughout its native growing areas, black cohosh roots and rhizomes were prized as an effective treatment for many manifestations of female gynaecological and hormonal dysfunction.² The Native Americans utilised the herb to soothe the pain of childbirth and ease uterine colic and symptoms of dysmenorrhoea, and also found uses for the plant for the treatment of general fatigue, snakebites and arthritis; European settlers adopted black cohosh widely and it eventually spread back to Europe, becoming a popular treatment for gynaecological problems.²

Black cohosh roots and rhizomes have a pungent and sweet taste. It is considered to be a cooling herb in the traditional Chinese medicine (TCM) system where it is known for acting primarily on the lung, spleen, stomach

and large intestine meridians, and is prescribed to detoxify pathogens and clear heat.³ In addition to its broad gynaecological indications, Chinese herbalists value black cohosh in the treatment of headaches, measles, aching gums, mouth ulcers, sore throats, and prolapses and protractions of the uterus and rectum.³

Based on its longstanding traditional uses, the British Herbal Pharmacopoeia lists ovarian dysfunction and insufficiency as indications for black cohosh,⁴ while the Commission E specifies its use in premenstrual syndromes and dysmenorrhoea.⁵

Actions

Primary:^{2,6}

- Hormonal modulator

Secondary:^{2,6}

- Anti-inflammatory
- Antirheumatic
- Antispasmodic
- Dopaminergic
- Serotonergic

Applications and indications

- Menopausal symptoms (including depression, heart palpitations, hot flashes and excessive perspiration, irritability, nervousness, sleep disturbance, tinnitus and vertigo)
- Premenstrual syndromes (PMS)
- Dysmenorrhoea
- Osteoarthritis and rheumatoid arthritis
- Conditions involving elevated luteinising hormone (LH)
- As a *partus preparator* in the final trimester of pregnancy^{2,7}

Active constituents and pharmacodynamics

Black cohosh contains a spectrum of triterpenes and triterpene glycosides, including actein and cimicifugoside. Other significant constituents include 27-deoxyactein, N-methylcytosine and other quinolizidine alkaloids, phenolic, isoferulic and salicylic acids, resins, fatty acids and tannins.²

Until recently it was assumed that the isoflavone formononetin was mainly responsible for the pharmacological actions of black cohosh, but rigorous testing has failed to detect this compound in both standardised commercial samples and raw plant material.⁸ It appears instead that the hormonal effects of black cohosh result from complex synergistic and modulating actions of several of the plants active constituents, particularly the triterpene glycosides.²

Ultimately, preclinical trials attempting to determine precise mechanisms of action have yielded conflicting results. In several trials, black cohosh was shown to exert an oestrogen-like effect, likely via phytochemicals binding to oestrogenic receptors.⁹⁻¹¹ But in other trials, anti-oestrogenic effects have been observed, as in one study that showed that black cohosh decreased local oestrogen formation in normal human breast tissue *in vitro*.¹² Researchers now generally consider black cohosh to be a selective oestrogen receptor modulator (SERM) with additional anti-inflammatory, antioxidant and serotonergic properties.²

Regardless of mechanism of action, it is generally agreed that black cohosh reduces the secretion of LH via way of at least three active constituents working synergistically.⁹ Increased levels of LH are connected to a spectrum of female gynaecological complaints including polycystic ovarian syndrome (PCOS), infertility, historical miscarriage, menopausal symptoms and ovarian dysfunction, insufficiency and pathology.⁶

Summary of clinical evidence

Menopausal symptoms

Human trials on black cohosh have almost exclusively investigated its use in treating the symptoms of menopause and most of those have been conducted using the standardised commercial preparation Remifemin®, which contains between 0.8-1.2mg of triterpene glycosides per tablet. Some studies have been conducted using an aqueous ethanolic extract.

In a 12-week pilot study, 95 menopausal women were split into two groups and administered either a 40mg dried black cohosh equivalent dosage of the ethanolic extract, conjugated oestrogens (0.6mg per day) or placebo. Climacteric complaints were assessed using the menopause rating scale (MRS) and the participants were given a patient diary to record sweating episodes and sleeping behaviour.

At the conclusion of the trial, 33 women had been eliminated due to non-compliance to the protocol, but of the remaining 62 women, those in the black cohosh group experienced significantly improved MRS scores, sleeping patterns and sweating episodes to the same degree as the conjugated oestrogens group.¹³

In a randomised, double-blind, controlled study, 244 women with menopausal symptoms were split into two groups and prescribed either black cohosh (Remifemin®) or tibolone. At the conclusion of the 12-week study, both treatments were determined to be similarly efficacious, with the tolerability profile in favour of Remifemin®, which displayed fewer adverse effects compared to the tibolone group.¹⁴

This randomised, double-blind, placebo-controlled trial, studied 84 post-menopausal women with determined scores between 15 and 42 on the Greene climacteric scale (GCS), which measures vasomotor, psychiatric, physical and sexual menopausal symptoms. The women were randomly divided into two groups and administered either a daily dose of 6.5mg of dried black cohosh root extract or placebo for eight weeks. The GCS assessment was repeated at four and eight weeks, and results were significantly lower at both points in the study group compared to placebo. No adverse reactions were reported in either group.¹⁵

A large study on 2016 menopausal women between the ages of 40 and 65 who had either refused or were contraindicated for hormone replacement therapy were assessed using the Kupperman Index at baseline, then after four, eight and 12 weeks of treatment with Remifemin®, an isopropanol extract of black cohosh. At the conclusion of the study, the average decrease in the Kupperman Index was a statistically significant 17.64 points, with the most profound improvements being noted as hot flashes, sweating, insomnia and anxiety.¹⁶

Additional preclinical data

Black cohosh has been studied extensively *in vivo*, investigating a range of potential activities beyond hormonal modulation. Significant data that adds weight to several other traditional uses of black cohosh include:

- **antipyretic effects:** oral administration of a black cohosh extract containing isoferulic acid was shown to reduce the body temperature of both normal rats and rats with typhoparatyphoid vaccine induced fever. A similar antipyretic action was demonstrated in rats using isolated cimicifugoside.³
- **anti-inflammatory effects:** several animal studies have identified significant anti-inflammatory activity in black cohosh preparations. Extracts of the herb have shown anti-inflammatory activity in rats with induced paw oedema.³

Dosage summary

Liquid extract (1:2): 10.5–21mL weekly²

Liquid tincture (1:5): 24.5–49mL weekly²

Liquid tincture (1:10): 42–84mL weekly²

Dried herb equivalent: 3–9g dried roots and rhizomes daily²

Safety information

While studies on black cohosh, particularly in the treatment of menopausal symptoms, have been consistently encouraging, little is understood about the herb's exact mechanism of action. Black cohosh appears to have a particularly complex spectrum of active constituents that can work unpredictably. The German Commission E recommends restricting use of black cohosh to six-month treatment periods in compliance with standard recommendations for hormone replacement therapy and for patients to attend regular medical check-ups when taking this herb.⁵

There is cause for caution in all prescriptions of this herb, including:²

- large doses have been reported to produce headaches, tremors and/or dizziness.
- gastrointestinal disturbances and rashes are the most common adverse effects according to data from clinical studies and spontaneous reporting programs. A few serious adverse events including hepatic and circulatory conditions have also been reported. Two cases of cutaneous vasculitis were tenuously linked to supplementation with black cohosh, although no analysis was undertaken to determine specifically which ingredients the supplement contained.
- black cohosh could alter response to the agents commonly used to treat breast cancer in the following ways:
 - decreasing the cytotoxicity of cisplatin in an experimental breast cancer model. It is recommended that patients taking cisplatin should avoid the herb until safety is confirmed.
 - increasing the cytotoxicity of doxorubicin in an experimental breast cancer model. It is recommended that patients taking doxorubicin avoid black cohosh until safety can be confirmed.
 - increasing cytotoxicity of doxorubicin and docetaxel and decreased the cytotoxicity of cisplatin, but did not alter the effects of radiation or 4-hydroperoxycyclophosphamide (an analogue of cyclophosphamide).
- Although traditionally used to assist in childbirth and as *partus preparator* with a history of safety and efficacy in the final trimester, black cohosh is not recommended during pregnancy (particularly during the first trimester).
- Safety in lactation is unknown.²

References

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