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[Home](#) | [Treatments](#)

Podophyllotoxin

Podophyllin resin is a substance derived from the roots of the mayapple plant (*Podophyllum peltatum*) that grows in the wild in eastern North America. The resin is the crude alcohol extract of the plant's rhizome or underground root system and is essentially made up of 4 different components: podophyllotoxin, 4-demethylpodophyllotoxin, a-peltatin, and b-peltatin. Podophyllotoxin is the most biologically active component and has been used for centuries by Native Americans for its medicinal properties.

A second species, *Podophyllum hexandrum*, grown in the mountain regions of India has been found to contain much more of the active component podophyllotoxin.

How does podophyllotoxin work and what is it used for?

Podophyllotoxin is an antimetabolic. It acts by preventing [viral wart](#) cells from dividing and multiplying. Eventually all the wart cells die and new healthy cells grow in their place.

For centuries, Native American tribes used the plant and its root for its medicinal, as well as poisonous, properties. Various uses of the plant included:

- Anthelmintic to treat parasitic worm infections
- Treat deafness
- Treat snake bites
- As a purgative and laxative
- As a suicidal potion

In the 1930s, doctors in New Orleans started using podophyllotoxin for the treatment of [genital warts](#). By 1942 the first description of this practice was published in medical literature.

In New Zealand, podophyllotoxin is a prescription medicine and available as a 0.15% w/w cream (Wartec™) and 5mg/ml solution (Condyline™) for the treatment of external condylomata acuminata (anogenital warts). It is not recommended for internal use or for extensive warts (more than 10 square centimetres).

How to use podophyllotoxin

Because of its potential to damage healthy skin cells, podophyllotoxin preparations should only be used as directed.

- Thoroughly wash the affected area with soap and water, and dry completely prior to application.
- Using one of the supplied cotton-tipped applicators, apply the cream or solution to just cover each wart. Make sure the treated area is dry before allowing the treated skin to come in contact with normal, untreated skin.
- Apply to warts twice daily for 3 consecutive days. If required, this treatment can be repeated every week, for a maximum of 5 successive weeks, until the wart is gone.
- Take care that the preparation does not come into contact with the healthy skin, eyes and mucous membranes, inside of the penis, rectum or vagina. Flush with water for 15 minutes if contact is made with any of these areas.
- Local irritation of healthy skin in the area or at the base of the wart through inadvertent contact with podophyllotoxin can be prevented by applying a protective layer of vaseline or zinc ointment on the

surrounding area prior to treatment.

- Make sure to wash your hands thoroughly after each application.

Precautions

Podophyllotoxin should not be used in pregnant women as human and animal studies have shown that the resin may be harmful to the fetus when used in pregnancy.

It is not known whether topical podophyllotoxin passes into breast milk, hence use of this resin during breastfeeding is not recommended unless the benefits far outweigh the risks.

Podophyllotoxin should not be applied to open wounds or bleeding sites.

Podophyllotoxin preparations contain alcohol and therefore may be flammable. Do not use near heat, open flame or while smoking.

Side Effects

The initial application of podophyllotoxin on the wart does not hurt but local irritation may occur on the second or third day of treatment when necrosis of the wart starts. Patients can expect tenderness, redness, itching, slight pain and superficial ulceration of the outer layer of the skin in treated areas. These local effects decrease after treatment or can be minimised after a few days of using a [topical corticosteroid](#).

Other side effects include burning and/or bleeding of treated skin, dizziness, headache, and vomiting. Patients should see their doctor if these side effects occur or if local effects worsen.

Related information

References:

- Book: Textbook of Dermatology. Ed Rook A, Wilkinson DS, Ebling FJB, Champion RH, Burton JL. Fourth edition. Blackwell Scientific Publications.
- Schwartz J, Norton SA. Useful plants of dermatology. VI. The mayapple (Podophyllum). Journal of the American Academy of Dermatology 2002;47:774-5. [Medline](#)

On DermNet NZ:

- [Genital warts](#)

Other websites:

- MedlinePlus: [Podofilox \(topical\)](#) - information about medicines
- Medsafe:
 - [Condyline](#): information about medicines
 - [Wartec Cream](#): information about medicines

Books about skin diseases:

See the [DermNet NZ bookstore](#)

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DermNet does not provide an on-line consultation service.

If you have any concerns with your skin or its treatment, see a [dermatologist](#) for advice.

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