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A DETAILED REVIEW OF PLANTS USED IN TREATMENT OF VARICOSE VEIN.

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ABSTRACT

Also known as varicosites, varicose veins are a clinical type of chronic venous disease. Varicose veins are enormous, twisted, and swollen; they frequently have a dark purple or blue appearance. Varicose veins are dilated, tortuous, elongated superficial veins that are usually seen in the legs. A large UK population study has shown age adjusted prevalence‘s of 40% in men and 32% in women, although women more often are getting affected by varicose veins. This condition is more common in women than in men, and it is primarily observed in the leg since the superficial veins there are under a lot of pressure. Genetic factors, malfunctioning valves, and weak vascular walls are all part of the pathophysiology. For conservative treatments like hydrotherapy, diet, and diet to be successful, a high degree of patient compliance is required. Herbal Preparations are reached widely distributed and approved as therapeutic agents such as anti-diabetic anti-aging, anti-microbial, anti-depressant, anti-inflammatory, anti-HIV, migraine, asthma, Alzheimers disease, treatment of cirrhosis. Primary varicose veins are characterised by valvular incompetence and reflux, which have long been assumed to be the cause. Recent research, on the other hand, reveals that valve dysfunction may be preceded by alterations in the vein wall. Surgery and other interventional procedures are also utilized to treat varicose veins.

INTRODUCTION

Varicose veins is Tortuous, twisted, or extended veins are known as varicose veins. Except in cases of severe development, size alone does not indicate problems because it might vary based on ambient temperature and, in women, hormonal considerations. Additionally, varicose veins may be subtle in an obese person, yet ordinary superficial veins may appear large in a thin person. Because of its greater cultural acceptability, superior compatibility with the human body, and lower side effects, herbal medicine continues to be the primary source of healthcare for 75– 80% of the world's population, primarily in developing nations. People who work as security guards, watchmen, police officers, soldiers, pullers of vehicles, porters, rickshaw pullers, launderers, drivers, teachers, and others frequently suffer from varicose veins.

Varicosities of the hemorrhoid plexus's veins, frequently accompanied by bleeding, thrombosis, and irritation, are what the Merck Manual characterizes as hemorrhoids. Both of these illnesses are incredibly common. According to demographic surveys, the prevalence of varicose veins is 20–25 percent for women and 10–15 percent for men. Varicose veins were found to be 48 percent in women and 58 percent in males, according to a recent cross-sectional study.

Causes of Varicose Vein

Varicose veins are caused by increased blood pressure in the veins. Varicose veins happen in the veins near the surface of the skin (superficial).

Fig. 1: Varicose Vein.

One-way valves in the veins direct the blood's flow to the heart. The veins may fill with blood if the valves are compromised or weakened. The veins get expanded as a result. Long-term sitting or standing can lead to blood pooling in the veins of the legs, which raises the vein pressure.

Type of Varicose Vein

1. Trunk varicose veins
2. Varicosite of extremities
3. Reticular varicose veins
4. Telangiectasia varicose vein
5. Spider vein

1. **Trunk Varicose Veins**: The anterior accessory saphenous vein, the Giacomini vein (intersaphenous), and the great and small saphenous veins are examples of truncal veins, often known as systematized veins. Subcutaneously placed and reticular in appearance, the non-truncal Superficial venous system is one of the non- systematized veins. Truncal veins, also known as systematized veins, comprise the anterior Accessory saphenous vein, the Giacomini vein (intersaphenous), and the Great and small saphenous veins. A subcutaneous vein with a reticular appearance is the non-truncal superficial venous system, one of the non-systematized veins.

Fig. 2: Trunk Varicose Veins.

2. **Reticular Varicose Veins**: Reticular veins are the visible veins below your skin that appear blue Purple in color, but they don’t bulge out as Varicose veins do. Reticular veins are smaller than Varicose veins but often appear together with them, The feeder vein smaller spider veins, causing pain And symptoms just like varicose veins do.

Fig. 3: Reticular Varicose Vein.

3. **Telangiectasia Varicose Vein:** They often appear As fine pink or red lines, which temporarily whiten When pressed. “Matted” telangiectasia’s are clusters Of these small, dilated blood vessels that form a Pink or red patch on the skin. Individuals who are Otherwise healthy can develop this condition, and it Is sometimes associated with varicose veins.

Fig. 4: Telangiectasia Varicose Vein.

4. **Spider Vein**: Varicose veins and spider veins arise as a result of vascular weakening or injury. Both varicose veins are physically obvious, albeit larger ones are more common. Veins of spiders can be red, purple, or blue. Branches, webs, or fine lines could be their appearance. They are sometimes called thread veins as well.

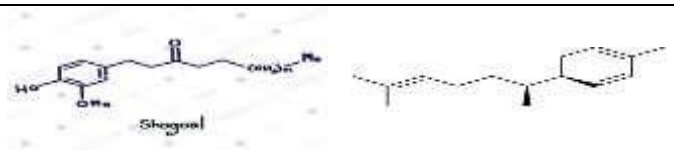
Fig. 5: Spider Vein.

Herbal Plants used in Varicose Veins

1. **Ginger:** Ginger has the ability to improve circulation by dissolving fibrin that pools in blood Vessel. Ginger may have anti-bacterial, antifungal and antiviral activities. The growth inhibition of Various microbes may be attributed to biological Mechanisms, including the suppression of the Biofilm formation that is integral to antimicrobial Resistance 5.

Fig. 6: Ginger.

Table 1: Drug profile of Ginger.

Sr.No.	Parameters	Details
1.	Botanical names	Zingiber officinale Family: Zingiberaceae
2.	Common Indian name	Adrak, ale, etc.
3.	Occurrence	Jamaica, South India (Cochin), Africa, Japan
4.	Part of plants possessing therapeutic activity	Rhizome (underground steam)
5.	Chemical constituents	 **ZINGIBERENE**
6.	Uses	Ginger is known as an anti-inflammatory superfood for varicose veins. Ginger helps improve blood flow and dissolves fibrin in blood vessels.

Mechanism of action

Step 1: Anti-inflammatory response: Gingerols inhibit prostaglandin synthesis, reducing inflammation & suppress NF-κB, a pro-inflammatory transcription factor.

Step 2: Vasodilation and relaxation: Gingerols stimulate nitric oxide (NO) production, causing vasodilation & shogaols relax vascular smooth muscle, improving blood flow.

Step 3: Antioxidant and free radical scavenging: Ginger's polyphenols neutralize free radicals, reducing oxidative stress & antioxidants protect endothelial cells from damage.

Step 4: Improved circulation and venous tone: Ginger's flavonoids enhance venous contraction, improving tone & improved circulation reduces venous pressure and swelling.

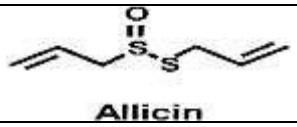
Step 5: Inhibition of platelet aggregation: Gingerols inhibit platelet activation, reducing thrombosis risk & Shogaols suppress platelet aggregation, improving microcirculation**.**

Step 6: Collagen synthesis and tissue repair: Ginger's polyphenols stimulate collagen synthesis, improving vein wall integrity & Antioxidants promote tissue repair, reducing inflammation.

2. **Garlic:** It can reduce inflammation and the Symptoms of varicose vein it also helps break up Harmful toxins in the blood vessels and improve Circulation. Garlic and its secondary metabolites Have shown excellent health-promoting and Disease-preventing effects on many human Common diseases, such as cancer, cardiovascular And metabolic disorders, blood pressure, and Diabetes, through its antioxidant, anti-Inflammatory, and lipid-lowering properties.

Fig. 7: Garlic.

Table 2: Drug profile of Garlic.

Sr.no.	Parameters	Details
1.	Botanical names	Allium Sativum Family : Amaryllidaceae
2.	Common Indian name	Garlic, lasan, lahsun
3.	Occurrence	Native to southeastern Asia
4.	Part of plants possessing therapeutic activity	Flower bulb
5.	Chemical constituents	 Allicin
6.	Uses	Garlic specifically can reduce inflammation and other symptoms related to varicose veins.

Mechanism of Action

Step 1: Bioactive compounds: Garlic contains compounds like allicin, diallyl disulfide, and S-allyl cysteine.

Step 2: Anti-inflammatory & Antioxidant activity: Reduce inflammation & Garlic's antioxidants neutralize free radicals, protecting vein walls from damage.

Step 3: Platelet aggregation inhibition: Compounds prevent platelet clumping, improving blood flow.

Step 4: Vasodilation: Garlic relaxes blood vessels, reducing pressure on varicose veins.

Step 5: Collagen synthesis: Promotes collagen production, strengthening vein walls.

Step 6: Improved circulation: Enhanced blood flow reduces swelling and discomfort.

3. **Cinnamon:** It reduces inflammation, Act as anti-Bacterial, anti-viral and anti-fungal. In addition to Being an antioxidant, anti-inflammatory, Antidiabetic, antimicrobial, anticancer, lipid-Lowering, and cardiovascular-disease- lowering Compound, cinnamon has also been reported to Have activities against neurological disorders, such As Parkinson's and Alzheimer's diseases.

Fig. 8: Cinnamon.

Table 3: Drug profile of Cinnamon.

Sr. no.	Parameters	Details
1.	Botanical name	Cinnamomum Verum Family: Lauraceae
2.	Common Indian name	Cinnamomum barthii Lukman, Dalchini
3.	Occurrence	It is native to Srilanka (formerly Ceylon), the Neighbouring Malabar Coast of India, and Myanmar (Burma). It is also cultivated in South America and West indies.
4.	Part of plants possessing therapeutic activity	Inner bark
5.	Uses	Cinnamon also helps in lowering blood pressure and improving blood circulation, all of which lowers the risk of heart disease.
6.	Chemical constituents	 Camphor

Mechanism of Action

Step: 1 Bioactive compounds: Cinnamon contains cinnamaldehyde, cinnamic acid, and eugenol.

Step: 2 Anti-inflammatory effects: These compounds reduce inflammation in affected veins.

Step: 3 Antioxidant activity: Cinnamon's antioxidants neutralize free radicals, protecting vein walls.

Step: 4 Vasodilation: Cinnamon relaxes blood vessels, reducing pressure

Step: 5 Improved circulation: Enhanced blood flow reduces swelling.

Step: 6 Collagen synthesis: Cinnamon promotes collagen production, strengthening vein walls.

Step: 7 Platelet aggregation inhibition:: Cinnamon prevents platelet clumping.

4. **Gotu kola:** Gotu kola has also been used to treat Syphilis, hepatitis, stomach ulcers, mental fatigue, Epilepsy, diarrhea, fever, and asthma. Today, in the U.S. and Europe gotu kola is mostoften used to treat varicose veins and chronic Venous insufficiency, a condition where blood Pools in the legs.

Fig. 9: Gotu Kola.

Table 4: Drug Profile of Gotu Kola.

Sr.no.	Parameters	Details
1.	Botanical names	Centella asiatica (L.) Family: Apiaceae
2.	Common name	Commonly known as Mandukparni or Indian pennywort or Jalbrahmi
3.	Occurrence	India, Japan, China, Indonesia, South Africa, Shri Lanka.
4.	Part of plants possessing Therapeutic activity	Whole plant

Mechanism of Action

Step 1: Anti-Inflammatory Response: Inhibition of inflammatory mediators (TNF-α, IL-1β, IL-6), Suppression of NF-κB activation & Antioxidant activity (scavenging free radicals)

Step 2: Neuroprotection and Cognitive Enhancement: Increased cerebral blood flow**,** enhanced neuronal survival and growth**,** inhibition of acetylcholinesterase (AChE) & Stimulation of neurotrophic factors (BDNF, NGF.

Step 3: Wound Healing and Collagen Synthesis: Stimulation of collagen synthesis**,** enhanced fibroblast proliferation**,** improved wound contraction and closure Antimicrobial activity.

Step 4: Antioxidant and Free Radical Scavenging: Neutralization of reactive oxygen species (ROS), protection against oxidative stress & inhibition of lipid peroxidation.

Step 5: Cardiovascular Protection: Vasodilation and improved blood flow & Anti-hypertensive effects.

Formulation used for Varicose Vein

Patch used for Varicose Vein

Fig. 10: Patches.

Coconut Oil: Known for its moisturizing properties, it can help improve circulation., **Apple Cider Vinegar:** It may help reduce the appearance of varicose veins due to its astringent properties, **Aloe Vera Gel:** Soothes and hydrates the skin, potentially improving blood flow, **Horse Chestnut Extract:** Contains aescin, which may help strengthen blood vessel walls and improve circulation, **Ginger:** Has anti-inflammatory properties that can enhance blood flow.

Cream used for varicose vein

Fig. 11: Cream Formulation.

Natural plant ingredients used in cream

Aloe Vera: Known for its soothing and moisturizing properties, Shea Butter: Helps to hydrate and protect the skin, Essential Oils: Such as tea tree or lavender, which may have antibacterial and anti-inflammatory benefits, Herbal Extracts: These might include calendula or chamomile, known for their calming effects.

Spray used for Varicose Vein

Fig. 12: Spray Formulation.

Horse Chestnut Extract: Known for improving circulation and reducing swelling, **Witch Hazel:** Acts as an astringent and may help relieve discomfort and reduce inflammation, **Grape Seed Extract:** Contains antioxidants that can support vein health, **Aloe Vera:** Soothes the skin and may help reduce swelling, **Essential Oils:** Such as peppermint or lavender, which can provide cooling effects and promote relaxation.

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