

# Preliminary Phytochemical screening of *Leptadenia reticulata* (Retz) Wight and Arn

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**Abstract:** Plants are preliminary source of chemicals used to treat the various disease conditions of living creature. Chemicals derived from plants fulfil every aspect of our daily requirements, as a source of food as well as medicinal agents. Medicinal plants gain recognition as they are the source of wide array of bioactive chemical entities. *Leptadenia reticulata* being an important medicinal plant is known to contain various phytochemical constituents like flavonoids, saponins, alkaloids, carbohydrates, terpenoids, glycosides and possessing anti microbial, anti cancerous, cardiovascular and lactogenic properties. The current study reveals the presence of flavonoids, saponins, phenols, diterpenes, proteins, carbohydrates during the phytochemical screening of *Leptadenia reticulata*.

**Keywords:** *Leptadenia reticulata*, lactogenic, Phytochemicals.

## Introduction:

*Leptadenia reticulata* (Retz) Wight and Arn commonly known as Jivanti or Dori belongs to family Asclepiadaceae is an important medicinal plant. This plant is distributed in tropical and subtropical parts of Asia and Africa. The centre of origin of *Leptadenia reticulata* is not known, but its oldest representation in Atharva Veda suggests Indian origin. The medicinal importance of this plant is due to the presence of various principal ingredients. The major phytochemical compound is stigmasterol. It also contains  $\beta$ -sitosterol,  $\alpha$ - amyryl,  $\beta$ - amyryl, ferulic acid, luteolin, diometin, rutin, hentriacontanol, a triterpene alcoholsimiarenol and apigenin( Kaushik *et al.*, 2013). The fruits of this plant contains quercetin, isoquercetin, rutin and hyperoside where as the seeds contain meso-inositol and monomethyl ether. The paste of seeds and leaves of *Leptadenia reticulata* is applied to gangrene in India (Schmelzer *et al.*, 2013). Reticulin, Denticulatin and Leptaculatin are the three novel pregnane glycosides isolated from the aerial parts of *Leptadenia reticulata*, which on hydrolysis give calogenin tocopherols. The other biochemicals present in the plant are acetyl alcohol, saponins, flavonoid and tannin ( Bawra *et al.*, 2010). Another formulation Leptaden, has been shown to provide effective treatment in cases of deficient lactation and lack of lactation in humans (Habla and Sitaratna, 1972). *Leptadenia reticulata* is an ingredient of chyawanprash, a traditional polyherbal formulation(Kasar *et al.*, 2007).The plant is a tonic that is beneficial for the patients who suffer from feebleness, or lack of energy. It also increases longevity, memory, immunomodulation and adoption (Chauhan *et al.*, 2010). The whole plant has been used to attenuate symptoms of hematopoiesis,

dysentery, emaciation, dyspnoea, burning sensation and night blindness(Sivarajan *et al.*, 1999). *Leptadenia reticulata* is known to possess many important activities like antiepileptic activity, hepatoprotective potential, hypotensive action, antimicrobial activity, lactogenic activity, cardiovascular activity, anticancerous, vasodilation. It is one of the ingredients of patent Siladan which has been claimed to be used in different kinds of mental disorders like sex neurosis(Hakim, 1964). Baig and Bhagwat, (2009) evaluated the effect of polynutrient formulation, Galactin Vet (The Himalaya Drug Company, Bangalore) having *L. reticulata* as one of the ingredient for increase in average milk production in cattle. In Atharva Veda this plant is reported to be a life and strength giver (Shekhawat, 2006). Ayurvedic formulary of India also accepts this medicinal plant as the true drug plant (Chunekar, 1999).

### **Materials and Methods:**

**Plant material:** The seeds of the plant were collected from bhuj (Gujrat), India and sown in the month of June in pots containing the mixture of sand, soil and vermicompost material under controlled conditions. The plants were properly raised. After harvesting these plants were properly washed under tap water 2-3 times and then were shade dried. The dried plant material was grinded and cold extraction was done. For extraction the whole plant of *Leptadenia reticulata* was used for phytochemical tests of alkaloids, flavonoids, glycosides, phenols, saponins and proteins. But for carbohydrates only leaves were used.

**Preparation of extract:** Cold extraction of the grinded material was done in petroleum ether and 80% methanol. There after the crude extract was collected after proper filtering and evaporation of the solvents used for extraction.

### **PHYTOCHEMICAL SCREENING:**

#### **Test for alkaloids:**

(a) Hager' test: The filtrate was treated with Hager's reagent. The yellow colour precipitate confirmed the presence of alkaloids.

(b) Dragendorff's test: The filtrate was treated with Dragendorff's reagent and the formation of orange precipitate shows the presence of alkaloids.

#### **Test for carbohydrates:**

Fehling test: 2ml extract were hydrolyzed with dilute HCL and neutralized with alkali and then heated with Fehling's solution A and B. The formation of red precipitate confirms the presence of reducing sugars.

**Test for Glycosides:**

Legal test: To 2ml of the extract, 1ml of pyridine and 1 ml of sodium nitro prusside were added. The change in colour to pink or red indicates the presence of glycosides.

**Test for saponins:**

Froth test: 5 ml extract was mixed with 20 ml of distilled water then agitated in graduated cylinder for 15 minutes. The formation of foam indicates the presence of Saponins.

**Test for phenols:**

Ferric Chloride test: The test extract were treated with 4 drops of Alcoholic FeCl<sub>3</sub> solution. Formation of bluish black colour indicates the presence of Phenols.

**Test for flavonoids:**

(a) Alkaline reagent test: The extract was treated with 10 % NaOH solution. the formation of intense yellow colour indicates the presence of flavonoids.

(b) Lead acetate test: The extract was treated with a few drops of lead acetate solution. Formation of yellow precipitate indicates the presence of flavonoids. Orange to crimson colour shows the presence of flavonones.

**Test for protein/Aminoacids:**

Xanthoproteic test: The extract was treated with few drops of concentrated HNO<sub>3</sub>. The formation of yellow colour indicates the presence of proteins.

**Test for diterpenes:**

Copper acetate test: The extract was dissolved in water and treated with 10 drops of copper acetate solution, formation of emerald green colour indicates presence of diterpenes.

**Table 1:**

S.No.	Secondary Metabolite	Tests	Methanolic Extract	Petroleum ether Extract
01	Alkaloids	Hager's test Dragendroff's test	-ve	-ve
02	Glycosides	Legal test	-ve	-ve
03	Phenols	Ferric chloride test	+ve	-ve

04	Saponins	Froth test	+ve	-ve
05	Flavonoids	Alkaline reagent test Lead acetate test	+ve	+ve
06	Diterpenes	Copper acetate test	+ve	+ve
07	Carbohydrates	Fehling test	+ve	-ve
08	Proteins/Aminoacids	Xanthoproteic test	+ve	-ve

**Result and Discussion:** The methanolic and petroleum ether extracts of *Leptadenia reticulata* were carried out for phytochemical analysis to evaluate the presence or absence of phytochemicals such as flavonoids, alkaloids, phenols, saponins, carbohydrates and proteins. The methanolic extract showed the presence of phenols, saponins, flavonoids, diterpenes, carbohydrates and proteins, whereas the petroleum ether extract showed only the presence of flavonoids and diterpenes. (Table-1).

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