



## Anti-bacterial activity of *Rhus succedanea* galls

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### Abstract

**Objective:** To evaluate the anti-bacterial activity of *Rhus succedanea* galls. **Materials and methods:** Aqueous extract was prepared and anti-bacterial activity was studied against five bacterial organisms by agar disc diffusion method. **Results:** Aqueous extract of *Rhus succedanea* galls exhibited significant anti-bacterial activity. **Conclusion:** The present results indicate the potential usefulness of aqueous extract of *Rhus succedanea* in the treatment of bacterial infections.

**Key Words:** *Rhus succedanea* galls, anti-bacterial activity.

### 1. Introduction

*Rhus succedanea* L. (Anacardiaceae) has been reported to possess astringent [1], antiviral [2], tonic, expectorant and stimulant properties [3]. In Indian ethno medicine, this plant is locally known as Kakrasingi and its galls have been used as Ayurvedic remedy for diarrhoea and dysentery [4].

In recent years, there is an increasing interest in the use of natural anti-bacterial agents, because of the necessity of finding safer treatment against bacterial infections. Hence, we have studied anti-bacterial potential of aqueous extract of *Rhus succedanea* galls comparable to gentamicin, a well-known aminoglycoside antibiotic, on different bacterial organisms by agar disc diffusion method.

### 2. Materials and methods

#### 2.1 Plant material

*Rhus succedanea* L. (Anacardiaceae) galls were collected from Jammu and Kashmir in March 1999. The sample was authenticated at our Pharmacognosy department where the voucher specimen (hb/99/06) has been preserved.

#### 2.2 Preparation of extract

Air-dried, powdered galls of *Rhus succedanea* were extracted by maceration process using distilled water (yield: 40.32%). Phytochemical screening [5, 6] of aqueous extract gave positive tests for flavonoids, catechins, saponins and tannins.

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Table 1  
Anti-bacterial activity of aqueous extract of *Rhus succedanea* galls<sup>a</sup>

Bacteria	<i>Rhus succedanea</i> at conc. (µg/disc)			Gentamicin (10µg/disc)
	300	600	900	
<i>Bacillus subtilis</i>	4.8	7.6	9.6	41.2
<i>Staphylococcus aureus</i>	7.6	11.2	14	41.6
<i>Staphylococcus epidermidis</i>	8.4	12.4	18	40
<i>Escherichia coli</i>	10.4	20.8	28.6	44.8
<i>Pseudomonas aeruginosa</i>	8.4	18.4	28	42.8

<sup>a</sup> Values, inhibition zone (mm) are average of triplicate experiments

### 2.3 Studied activity

Aqueous extract of the galls was used for present investigation. Five bacterial organisms were used. The *in vitro* anti-bacterial activity of aqueous extract at different concentrations of 5, 10 and 15 mg/ml was studied by agar disc diffusion method [7,8] against *E. coli*, *B. subtilis*, *S. aureus*, *P. aeruginosa* and *S. epidermidis*.

The activity of aqueous extract was compared with the standard anti-bacterial gentamicin. The plates were incubated at 37°C for 48 h. The zone of inhibition was calculated by measuring the minimum dimension of the zone of no microbial growth around the disc. For each data, an average of three independent determinations were recorded (Table 1).

### 3. Result and discussion

The aqueous extract of *Rhus succedanea* galls

exhibited moderate to significant and concentration-dependent anti-bacterial activity against all the tested bacterial organisms at concentrations of 5, 10 and 15 mg/ml comparable to that of gentamicin sulphate (100 µg/ml). This study also reveals that aqueous extract of crude drug was found to be highly effective against *E. coli* and *P. aeruginosa* (Gram-negative bacteria).

Our results indicate the potential usefulness of *Rhus succedanea* galls in the treatment of bacterial infections. Further phytochemical studies are needed to identify constituents responsible for the observed activity.

### 4. Acknowledgements

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