

## RESEARCH ARTICLE

### Study of Antifungal Effects of *Trachyspermum ammi* (L.) Sprague

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#### ABSTRACT:

In the recent years there has been increasing interest in the use of substances from natural origin, as there are certain problems in concern with the safety of synthetic compounds. In the present study antifungal property of the seeds of *Trachyspermum ammi* (Umbellifereae) has been conducted. The seeds are powdered and 2% seed powder was added in the plate containing molds of *Aspergillus niger*.

It has shown remarkable inhibition in the growth of *Aspergillus niger* and also suppressed the growth of other fungi.

**KEYWORDS:** Antifungal, *Trachyspermum ammi*, *Aspergillus niger*

#### INTRODUCTION:

Everyone is exposed to mold in the outdoor air but exposure to indoor molds can accelerate aggravated conditions for some individuals. Indoor mold fungi adversely affect human health through allergy, infection, and toxicity<sup>1</sup>. The dependence of mankind on plant resources for their medicinal uses dates back to more than 15000 years ago. *Trachyspermum ammi* belonging to family Umbellifereae has antifungal properties. The essential oil extracted from *Trachyspermum ammi* has shown antifungal properties. The oil exhibited a broad spectrum of fungitoxic behavior<sup>2-8</sup> against most of the fungi. Jaiswal et al<sup>9</sup> studied phytotoxicity of essential oil of *Trachyspermum ammi*. The essential oil obtained from *Trachyspermum ammi* has shown use against seed-borne fungi of Guar<sup>10</sup>.

Antimicrobial activity of the essential oils of plants belonging to family Umbellifereae was studied by some researchers.<sup>11,12</sup> The essential oils isolated from *Trachyspermum ammi* has shown remarkable Nematicidal action<sup>13</sup> against root-knot nematode. Decoction of the seed was prepared and used for curing diarrhoea, dysentery<sup>14,15</sup> and stomach disorders<sup>16</sup>.

The plant has also shown antipyretic utility<sup>17</sup>. It is extensively used as antiinflammatory<sup>18</sup>.

In the Unani system the plant is used to enhance immune power of body<sup>19</sup>.

Here an attempt has been made to minimize the risk of indoor fungi by 2% grounded powder of *Trachyspermum ammi* seed against the *Aspergillus niger* and suppression of growth of other indoor fungi was also studied.

#### Objectives:

1. Examine the fungal colonies developed in Potato Dextrose Agar (PDA) plate containing 2% powder of *Trachyspermum ammi* seed..
2. Study effectiveness of 2% seed powder of *Trachyspermum ammi* against *Aspergillus niger*.

#### Material and Methods:

##### Material required:

*Trachyspermum ammi* seeds were collected from grocery shop at Patancheru (A.P.) and were identified by ICRISAT Patancheru (A.P.). The seeds were powdered in mortar pestle. Potato Dextrose Agar (PDA) medium of Hi Media laboratories was used to prepare the medium. Petri plates (1×9 cm) containing only PDA were served as control and PDA plates containing 2% grounded seed powder of *Trachyspermum ammi* were prepared by adding 2% grounded seed powder of *Trachyspermum ammi* in PDA before autoclaving the medium, were served as treatment (Fig. 1).

##### Isolation of *Aspergillus niger*:

One plate containing PDA with 2% grounded seed powder and another with only PDA were kept open for 72 hr. in laboratory for the expression of indoor fungi on the plates. The indoor fungi were developed on the plate. The colony of *Aspergillus niger* was isolated in pure culture for the experiment by inoculating on PDA plates.

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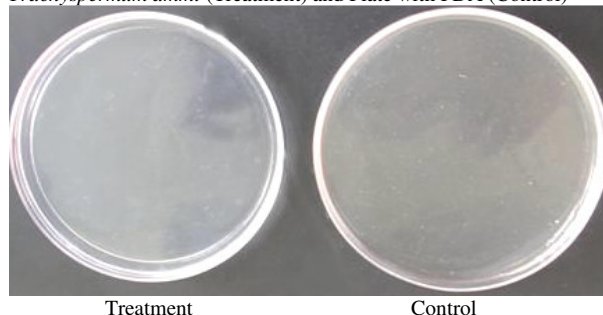
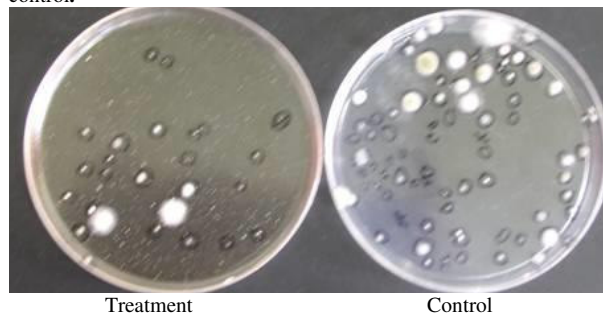
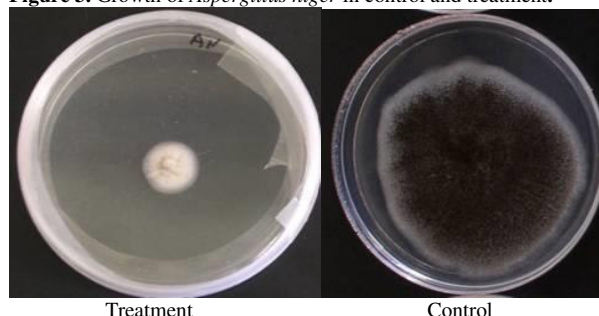
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**Table 1. Number of fungal colonies and growth of *Aspergillus niger* in treatment and control**

Treatment	No. of colonies		Mean	Growth of <i>A. Niger</i> in cm		Mean	Mean Reduction (%)
	First experiment	Repeat experiment		First experiment	Repeat experiment		
PDA + 2 % Grounded seed powder of <i>Trachyspermum ammi</i>	25	29	27	1.5	1.4	1.45	69
PDA (control)	90	94	92	5.0	4.5	4.75	

**Figure 1.** Plate containing PDA+ 2% grounded seed powder of *Trachyspermum ammi* (Treatment) and Plate with PDA (Control)**Figure 2.** Number of fungal colonies developed in treatment and control.**Figure 3.** Growth of *Aspergillus niger* in control and treatment.**Effect on *Aspergillus niger* growth:**

The growth of *Aspergillus niger* was measured separately in plates containing only PDA and plates containing 2% grounded seed powder of *Trachyspermum ammi* after 72 hr. of incubation. The growth of *Aspergillus niger* was suppressed by 69% in PDA plate containing 2 % grounded seed powder of *Trachyspermum ammi* compared to control plate after 5th day of inoculation (Fig. 3). This indicates that 2% *Trachyspermum ammi* seed powder minimizes *Aspergillus niger* very effectively. In repeated experiment the results were appeared same. (Table 1).

**CONCLUSIONS:**

Ninety-two fungal colonies were developed in control plates, whereas 27 colonies were developed in treatment plates.

*Cladosporium* sp, *Aspergillus* sp, *Penicillium* sp, *Fusarium* sp, *Rhizopus* sp were detected in control plates and only *Cladosporium* sp and *Fusarium* sp were detected in treatment.

*Aspergillus niger* growth was suppressed by 69% in the plate containing 2% grounded seed powder of *Trachyspermum ammi* compared to control plate.

**ACHIEVEMENTS:**

2% grounded seed powder of *Trachyspermum ammi* minimize the risk of – *Aspergillus niger* by 69% and also minimize the risk of other indoor fungi except *cladosporium* and *fusarium*.

**Future thrusts:**

- Study the 2% grounded seed powder of *Trachyspermum ammi* for antibiosis against the indoor mold fungi
- Evaluate the antibiotic properties against these fungi

**Inoculation:**

The pure colonies of *Aspergillus niger* were inoculated separately in PDA plate containing 2% grounded powder of *Trachyspermum ammi* seed and the plate containing only PDA (control). All plates were incubated at 260°C with alternate cycle of 12 h light and dark for 5 days. The whole experiment was repeated.

**Observations:**

The numbers of colonies of indoor fungi expressed in both the plates (in control and treatment) were counted and the growth of *Aspergillus niger* was measured separately in control and treatment plates after 5 days. Same observations were taken in repeated experiment.

**RESULTS:****Fungal flora expression:**

Ninety two fungal colonies of five genera (*Cladosporium* sp, *Aspergillus* sp, *Penicillium* sp, *Fusarium* sp, *Rhizopus* sp) were developed in the control plate and only 27 fungal colonies belonging to *Cladosporium* sp and *Fusarium* sp. (Fig. 2) were expressed in plate containing 2 % grounded seed powder of *Trachyspermum ammi*. (Table1).

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