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EFFECT OF SOME FOOD PRESERVATIVES ON SEED MYCOFLORA AND PHYSIOLOGICAL PARAMETERS OF FENUGREEK

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Abstract
The Four different preservatives, camphor, asafoetida, naphthalene and boric acid were used to test their efficacy in controlling the mycoflora of fenugreek. Boric acid followed naphthalene Camphor and asafetida eliminated majority of seed borne mycoflora of fenugreek. Maximum reduction in the germination, seedling length and seed vigour was observed by asafoetida followed by naphthalene and camphor. Boric acid showed higher germination, seedling length and seed vigour than the control (untreated).

Introduction :

Information on storage of seeds to preserve the viability and vigour from harvest to next planting season is of prime importance in any seed production and storage programme. In the present investigation efficacy of some locally available natural food preservatives was studied for protection of fenugreek (methi) seeds from mould infestation.

Materials and Methods :

One kg seeds of Fenugreek (**Trigonella foenum-graecum** L.) was taken in separate tins and 1 g of each compound (camphor, asafoetida, naphthalene and boric acid) was placed and a lid was replaced. The seeds thus prepared were stored at room temperature(27°C) for 30 days. At the ends of storage period the seed borne mycoflora germination, seedling length and seed vigour method (1) and dilution plate method (2) The food preservatives adversely affected seed mycoflora of fenugreek (Table 1) However, the effect varied with the preservative. Camphor was responsible for eliminating *Aspergillus terreus, Drechshera halodes, Fusarium moniliforme, Mucor varians, Oedocephalum sp, Penicillium funiculosum, Alternaria alternate, Rhizoctonia solani and Verticillium cyclopium* on the other hand, this encouraged the growth of *F. heterosporum and A. niger.* Napthalene inhibited the growth of *Cladosporium cholorocephalum, D. halodes, M. lvarians, Oedocehalum sp, Paecilomyces varioti, P. aurantiogriseum and R. solani.* Asofoetida (Hing) inhibited the growth of *Alternaria, Aspergillus japonicas, F. oxalicum, P. funiculosum, P. verruculosum var. cyclopium, Humicola grisea, R. solani and Trichoderma koeningii.* However, it promoted the growth of *C. oxysporum, F. heterosporum, Phoma sp.* Boric acid was found to be highly inhibitory to the growth of *A. terricola, A. flavus, P. varioti, P. aurantigogriseum, P. oxalicum, H. grisea and R. solani.* However, it was not effective to control the growth *of Cladosporium oxysporum* and *F. heterosporum.*

Maximum reduction in the germination, seedling length and seed vigour observed by asafoetida followed by naphthalene and camphor. Boric acid showed higher germination, seedling length and seed vigour than the control. Similarly Boric acid followed by naphthalene and camphor eliminated majority of seed borne mycoflora of fenugreek.

Table. 1. Effect of some food preservatives of seed mycoflora of fenugreek

Name of the fungus	Control		Camphor		Naphthalene		Asofoetida		Boric Acid	
	A	B	A	B	A	B	A	B	A	B
Acremonium terricola	2.4	7.5	-	10.4	-	1.2	-	-	-	-
Alternaria dianthicola	4.0	-	-	-	-	1.0	1.4	-	-	-
Alternaria sp.	-	1.0	-	-	-	1.0	-	-	-	-
Asergillus flavus	18.2	1.2	1.2	1.2	3.5	1.2	10.0	10.2	-	-
A. Fumigatus	10.4	10.1	2.6	3.5	10.2	10.6	6.8	7.4	8.4	10.2
A. Japonicas	5.6	8.4	1.2	1.6	1.2	1.4	1.8	-	1.2	10.6
A. Niger	30.2	-	7.6	2.6	15.2	1.0	20.0	-	3.6	-
A. Terrus	1.2	8.1	-	-	-	2.6	-	6.2	-	2.4
Aspergillus sp.	-	1.2	-	1.2	-	3.5	-	1.0	-	-
Cladosporium cholorocephalum	-	2.2	-	-	-	-	-	1.0	-	-
C. cladosporioides	-	2.6	-	5.4	-	10.2	-	10.2	-	5.2

C. oxysporum	1.4	-	-	1.2	-	-	-	4.2	-	2.2
Curvularia lunata	-	-	-	-	-	1.2	-	-	-	-
Drechslera halodes	-	1.2	-	-	-	-	-	1.0	-	-
Epicoccum purpurescenes	1.2	1.4	-	-	-	-	-	-	-	-
Fusarium heterosporum	2.2	-	1.2	5.2	-	5.5	1.2	6.2	-	1.2
F. moniliforme	-	1.2	-	-	-	3.6	-	-	-	-
Humicola grisea	-	2.4	-	1.2	-	2.4	-	-	-	-
Mucor varians	10.2	2.2	1.6	-	1.2	-	2.0	-	10.8	2.0
Oedocephalum sp.	-	1.2	-	-	-	-	-	-	-	-
Paecilomyces varioti	-	1.3	-	2.4	-	-	-	6.8	-	-
Penicillium aurantigogriseum	-	1.2	-	1.3	-	-	-	-	-	-
P. Citrinum	1.5	1.2	-	3.9	1.8	10.5	2.2	14.2	-	2.6
P. funiculosum	-	2.6	-	-	-	3.6	-	-	-	1.8
P. oxalicum	2.2	1.4	-	4.5	-	1.2	-	-	-	-
P. verruculosum var. cyclopium	-	1.2	-	1.2	-	3.4	-	-	-	1.2
Phoma sp.	-	-	-	-	-	1.2	-	1.8	-	-
Rhizoctonia solani	-	1.2	-	-	-	-	-	-	-	-
Syncephalastrum recemosum	-	1.4	-	1.4	-	1.0	-	1.0	-	-
Trichoderma koningii	-	1.6	-	2.6	-	5.6	-	-	-	4.6
Verticillium cyclopium	1.2	1.2	-	-	-	3.6	-	1.8	-	3.8
Sterile mycelia	1.4	-	-	1.2	-	-	-	1.6	-	2.2

A= Blotter technique, B= Dilution plate method.

Table 2. Effect of some food preservatives on germination and seedling vigour of fenugreek.

Preservative	Germination %	Seedling length (cm)	Vigour index.
Control	91	11.42	1039.22
Camphor	88	11.01	968.88
Naphthalene	86	11.04	949.44
Asofoetida	85	10.81	918.85
Boric acid	94	12.46	1171.24

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