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A homoeopathic drug controls mango fruit rot caused by *Pestalotia mangiferae* Henn.

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Summary. Effect of 1-200 potencies of ten homoeopathic drugs on the spore germination of *Pestalotia mangiferae*, the causal organism of banana fruit rot, was studied. On the basis of results of in vivo studies with inhibitory doses of drugs, Lycopodium clavatum potency 190 has been recommended for the control of the disease.

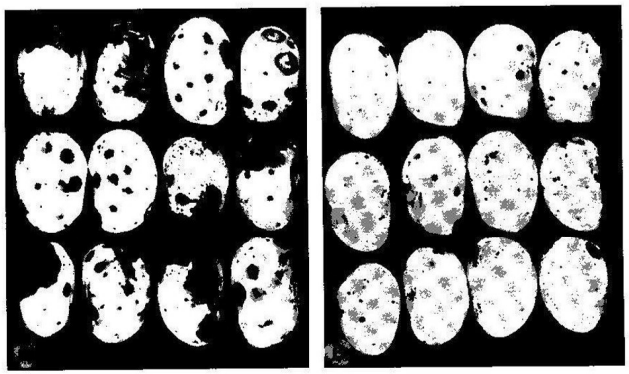
A number of methods are employed to control postharvest decay of fruits, but each method has its own limitation. In recent past some homoeopathic drugs have been shown to induce toxic effects on phytopathogens[2-6]. The present report incorporates the results of in vitro and in vivo evaluation of some homoeopathic drugs against *P. mangiferae* Henn., the causal agent of mango fruit rot.

Materials and methods. Drugs used in the study were Arsenicum album, Kali iodatum, Lycopodium clavatum, Phosphorus, Thuja occidentalis, Asvagandh, Blatta orientalis, Zincum sulphuricum, Filix mas and Kali muriaticum. The fungitoxicity of drugs was determined in terms of the inhibition of spore germination of the causal fungus. Effect of 1-200 potencies (dilutions) of each drug was studied, and the potencies were prepared in distilled water on centesimal scale as described by Khanna and Chandra[4]. To do this, one part of the mother tincture (a concentrated solution of drug) and 99 parts of distilled water were mixed in a phial by means of 10 powerful strokes. The solution was regarded as a drug having one potency and was denoted by the number 1. To make subsequent potencies, 1 part of the preceding potency and 99 parts of distilled water were mixed in a phial and were denoted with increasing potency numbers such as 2, 3, 4 ... 200. Prior to use, the drugs were sterilized by filtration through bacterial filters. Spores of the pathogens were suspended in different potencies of the drugs, and hanging drop technique of Hoffman[7] was employed to determine percentage of spore germination.

Efficacy of various homoeopathic drugs in checking mango fruit rot*

Drug	Pre-inoculation treatment		Post-inoculation treatment	
	PFI**	PRD***	PFI**	PRD***
Phosphorus potency 50	100	40.4 a	100	38.5 a
Lycopodium clavatum potency 190	3.4	2.5 b	2.8	2.0 b
Asvagandh potency 100	100	34.9 c	100	39.6 ac
Arsenicum album potency 1	100	41.3 ad	100	41.5 cd
Arsenicum album potency 89	100	35.2 ce	100	38.0 ace
Arsenicum album potency 90	100	32.6 cef	100	40.2 acdef
Zincum sulphuricum potency 1	100	38.4 acdeg	100	36.6 aeg
Zincum sulphuricum potency 2	100	40.0 adgh	100	38.9 acdefgh
Control	100	41.5 adgh	100	41.8 cdfh
C.D. at 5%		3.58		2.93

* Results were statistically analyzed for analysis of variance and Duncan's Multiple Range Test at 5% level. Numbers followed by the same letter are not significantly different within columns. ** PFI, percentage fruit infected; *** PRD, percentage rot developed.



Inoculated mango fruits after 8 days of storage. *A* Untreated fruits. *B* Fruits given pre-inoculation dip in Lycopodium clavatum potency 190.

3 replicates were taken for each treatment and the mean value of the replicates was recorded. Percentage spore germination was recorded after an incubation of 8–12 h.

The drugs which completely inhibited the spore germination in vitro, were screened for their efficacy in checking the fruit rot. For this purpose, healthy mango fruits, just ripe, var. 'Dasheri', were employed. Both pre- and post-inoculation treatments were given to the fruits. The fruits after disinfection were injured with sterilized needle. The inoculum was provided in the form of spore suspension and the inoculated fruits were incubated for 24 h. Dip treatments were given to the fruits for 3–5 min in each drug and the treated fruits were stored in glass chambers at 24 °C (±1 °C). For pre-inoculation treatment, the injured fruits were dipped in each drug prior to inoculation. In the control series, the inoculated fruits were dipped in sterilized distilled water instead of a drug. In all cases, 5 replicates of 12 fruits each were taken and the percentage fruit infected and percentage rot developed were determined after 8 days.

Results and discussion. Effect of drugs on the spore germination of the fungus indicated that Phosphorus potency 50, Lycopodium clavatum potency 190, Asvagandh potency 100, Arsenicum album potencies 1, 89 and 90 and Zincum sulphuricum potencies 1 and 2 completely inhibited the spore germination. Other drugs either did not affect or only reduced the percentage of spore germination. Thus, only those drugs which completely inhibited the spore germination were evaluated for their efficacy in checking the fruit rot.

The results presented in the table indicate that, except for Lycopodium clavatum potency 190, none of the drugs tested could reduce the percentage of fruit infected. They further indicate that, although all the inhibitory potencies reduced the percentage rot, Lycopodium clavatum potency 190 was found to be most effective in both the types of treatment. Thus only Lycopodium clavatum potency 190 was effective both in reducing the percentage fruit infection as well as percentage rot (figure). Detail studies dealing with the analysis of the extracts of treated fruits with Lycopodium clavatum potency 190 showed that the drug did not induce any change in amino acid, amide, organic acid, sugar and vitamin C contents of the fruits. On the basis of the above results, Lycopodium clavatum potency 190 may be safely recommended for the control of mango fruit rot caused by *P. mangiferae*.

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