EFFECTS OF FOUR HOMOEOPATHIC MEDICINES AND A BIOCHEMIC COMPOUND AGAINST DERMATOPHYTES

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ABSTRACT: The effects of four homoeopathic medicines and a biochemic compound on two dermatophytes were studied. All these four medicines were found inhibitory for the growth of these skin pathogens, their sporulation, spore germination and also to germ tube elongation at various incubation periods. Bacillinum was found most inhibitory. The use of these medicines against known pathogens *in vivo* with appropriate doses is urged.

INTRODUCTION

In medical field various drugs are in use for fighting against human and animal diseases. But the skin diseases caused by dermatophytes are rarely treated by drugs other than a few antifungal antibiotics available in the market of our country.

Some workers[1-4] tested sulpha drugs and antibiotics against dermatophytes. A little attention has been given to the use of homoeopathic drugs against fungal pathogens of plants but their action against skin pathogens is not well established. Therefore it was proposed to test a few homoeopathic medicines against two skin pathogenic fungi *in vitro*.

MATERIALS AND METHODS

Four homoeopathic medicines, i.e. Lycopodium, Ustilago, Tellurium, Bacillinum in 1000 potency and a biochemic compound No. 20 (Bio-Plasgen 20, Schwabe) were screened for their effect on growth, sporulation, spore germination and germ tube elongation of *Microsporum fulvum* IMI 276189 and *M. gypseum* IMI 276190. Different concentrations (Table 2) of these medicines were used by mixing appropriate quantity in sterilized Sabouraud's dextrose agar just before pouring into petri plates. The plates were then inoculated with the growing tips of 8 days' old test organisms previously grown on Sabouraud's dextrose agar. The plates were incubated at 28° ± 1°C for 8 days. The diameter of colony was measured and expressed as fungal growth. Controls were run without treatments. At the end of incubation period the sporulation was also observed by preparing spore mounts in lactophenol and cotton blue mixture.

The spore suspension was prepared by washing the surface of 8 days' old Sabouraud's dextrose agar slants with 5ml sterilized distilled water. A drop of spore suspension was placed on Sabouraud's dextrose agar discs supplemented with the drug (Tables 1 & 2) and kept in moist chamber in

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petri plates on sterilized slides and incubated at 28° ± 1°C. The per cent spore germination was counted. Control discs without treatments were also processed and per cent spore germination was counted. Each datum shown in tables is an average of two independent determinations.

RESULTS AND DISCUSSION

Microsporum fulvum: Bacillinum was found most inhibitory for *Microsporum fulvum* as this fungus could not grow in this drug. Similarly Lycopodium, Ustilago, Tellurium and a biochemic compound were also found inhibitory for fungal growth when compared to control (Table I). Low concentration of the drugs did not favour the growth. The sporulation was very poor in Lycopodium, Ustilago and Bacillinum while in Tellurium

TABLE 1

INFLUENCE OF HOMOEOPATHIC MEDICINES AND A BIOCHEMIC COMPOUND ON *M. fulvum*.

		Growth diameter (mm)				Spore germination (%)			
Medicines	Doses (μg/ml)	Time of incubation (days)			Sporulation	Time of incubation (hrs.)			Length of germ tube
		2	4	8		4	8	24	
Lycopodium	12.5	10	15	25	+++	8	35	65	*
	25.0	7	10	18	+++	5	25	56	*
	112.5	—	8	10	++	3	20	50	*
	225.0	—	—	6	+	—	6	15	2μ–18μ
Ustilago	12.5	14	18	25	+++	8	17	46	*
	25.0	10	12	16	+++	4	13	32	*
	112.5	6	6	10	+	—	6	12	2μ–22μ
	225.0	—	6	8	+	—	4	6	2μ
Tellurium	12.5	8	25	40	+++	11	30	65	*
	25.0	—	6	12	++	9	15	40	*
	112.5	—	10	15	++	4	12	25	2μ–28μ
	225.0	—	—	6	—	—	2	8	2μ–12μ
Bacillinum	12.5	10	14	18	++	15	34	48	*
	25.0	7	9	12	++	7	9	32	2μ–28μ
	112.5	7	7	9	+	4	11	19	2μ–22μ
	225.0	—	6	6	+	2	5	8	2μ–10μ
Biochemic compound	500	10	15	30	+++	20	30	69	*
	1000	8	10	25	+++	13	25	50	*
	2000	—	—	6	+	10	16	37	4μ–38μ
	Control	21	38	60	+++	20	36	87	*

+++ Excellent, ++ Good, + Poor — No sporulation

* Mycelial clumps.

TABLE 2

INFLUENCE OF HOMOEOPATHIC MEDICINES AND A BIOCHEMIC COMPOUND ON *M. gypseum*.

Medicines	Doses (μg/ml)	Growth diameter (mm) Time of incubation (days)			Sporulation	Spore germination (%) Time of incubation (hrs.)			Length of germ tube
		2	4	8		4	8	24	
Lycopodium	12.5	8	20	30	+++	10	39	78	*
	25.0	7	15	20	++	6	30	63	*
	112.5	0	10	15	+	4	21	54	*
	225.0	0	7	10	+	0	8	18	2μ–20μ
Ustilago	12.5	12	16	30	+++	8	21	47	*
	25.0	10	10	20	++	2	12	24	*
	112.5	0	8	14	++	0	3	9	2μ–22μ
	225.0	0	0	6	+	0	0	4	2μ–6μ
Tellurium	12.5	10	22	36	+++	9	27	70	*
	25.0	6	10	25	+++	5	13	35	*
	112.5	0	8	18	++	5	9	20	2μ–24μ
	225.0	0	0	10	+	0	2	8	2μ–4μ
Bacillinum	12.5	8	12	20	++	14	26	58	*
	25.0	6	8	14	++	5	8	28	2μ–20μ
	112.5	0	6	10	+	3	6	19	2μ–8μ
	225.0	0	0	0	—	0	4	6	*
Biochemic	500	9	20	40	+++	29	40	60	*
	1000	12	14	30	+++	19	25	53	*
	2000	0	6	10	+	10	15	45	*
	Control	23	42	61	+++	24	43	96	*

+++ Excellent, ++ Good, + Poor, — No sporulation
* Mycelial clumps.

(225 μg/ml) the fungus could not sporulate and slight growth appeared only after 4th day in this medicine. Biochemic compound could not enhance sporulation as compared to other drugs in low concentrations.

In small doses of Lycopodium, Ustilago, Tellurium, Bacillinum and a biochemic compound 65, 46, 48 and 69% spores were germinated respectively High concentration of Ustilago (225 μg/ml) caused maximum inhibition along with inhibition in germ tube length. This pattern was also followed by Bacillinum and Tellurium showing inhibition of spore germination at high concentration. Bacillinum could not allow the germ tube elongation beyond 28μ. Biochemic compound could not influence spore germination as efficiently as did by other drugs.

Microsporum gypseum: Bacillinum inhibited the growth and sporula-

tion of *M. gypseum* completely and whenever few spores germinated, the germ tube did not elongate more than 8μ. Lycopodium, Tellurium and Ustilago at all concentrations favoured little growth only. Sporulation at high concentration (225 μg/ml) was very poor. Biochemic compound showed inhibition in growth but not as much as in other drugs. Tellurium suppressed the growth of *M. gypseum* up to 4th day and small colony (10mm) was seen after 8th day (Table 2).

Maximum inhibition of spore germination was recorded in Bacillinum than in Ustilago. Latter medicines at its high concentration inhibited germination up to 8 hrs. and 4% spores with a maximum length of 6μ germ tube were found germinated. Small doses of all homoeopathic medicines favoured formation of mycelial clumps. This compound was less effective on growth, sporulation, spore germination and germ tube elongation as compared to other homoeopathic medicines studied here.

The effects of all the medicines against two dermatophytes were inhibitory for the growth, sporulation, spore germination and germ tube elongation. Bacillinum was most inhibitory for both these pathogens. The retardation in spore formation by these drugs could be effective in checking the dispersal of spores and hence the spread of the diseases by means of spores. The inhibition of germ tube elongation is also an important role played by homoeopathie medicines. This inhibition if maintained, would be useful in elimination of these skin pathogens from the host. Concentrations of these drugs used here were selective and do not have any relation with the doses used *in vivo*. The trail of these drugs *in vivo* against known skin pathogens may reveal an important avenue in the field of medical mycology.

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