

THE EFFECT OF AGE ON THE VIABILITY OF *PENICILLIUM NOTATUM* SPORES IN WATER AND SOLUTIONS OF PHENOL

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IMMATURE spores have a slower rate of germination and less of them germinate than mature spores; they are also more sensitive to unfavourable temperatures. Physiologically senescent spores behave similarly (Cochrane, 1958). We report a variation in resistance to phenol of *Penicillium notatum* spores of different ages.

EXPERIMENTAL

Oxoid Sabouraud glucose agar slopes were inoculated from a stock culture of *P. notatum*, incubated at 28° and used at intervals from the third to the twenty-eighth day to prepare spore suspensions. The viability of the spores in water and after exposure for 10 and 20 min. to a 1 per cent solution of phenol and for 10 min. to a 1·125 per cent solution was determined at 25°. The methods of preparation of spore suspensions and evaluation of fungicidal activity were those of Chauhan and Walters (1961; 1962).

RESULTS AND DISCUSSION

Table I shows that maximum resistance to both solutions of phenol is found in spores from 5–10 day cultures. Table II shows that when stored in water at 4° the resistance to phenol of an aqueous suspension of a 10-day old culture remained unaffected for seven days. Moreover, the subsequent decrease in resistance to phenol is less marked than when the spores were allowed to age in culture (cf. Tables I and II).

TABLE I
EFFECT OF AGE ON THE VIABILITY OF *P. notatum* SPORES
IN WATER AND SOLUTIONS OF PHENOL

Phenol concentration (per cent)	Contact time (min.)	Per cent germination								
		Spores from culture of age (days)								
		3	5	8	10	12	15	19	24	28
0	20	99	97	97	96	97	94	93	92	91
1·0	10	20	70	66	66	56	42	22	23	25
1·0	20	13	56	55	55	37	22	15	14	9
1·125	10	5	19	21	20	12	5	2	<1	<1

As spores taken from a 3-day culture will not all have been formed at the same time, the oldest having an age of about 48 hr., some, although detachable and capable of germination, may not be fully developed, and

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because of this might be expected to show less resistance to phenol than mature spores.

Maximum resistance to phenol is possessed by spores from 5-10 day cultures, which are presumably mature. When older than 10 days their resistance to phenol decreases with increasing age.

TABLE II
EFFECT OF STORAGE OF *P. notatum* SPORES* IN WATER
AT 4° ON THEIR VIABILITY IN SOLUTIONS OF PHENOL

Phenol concentration (per cent)	Contact time (min.)	Per cent germination								
		Storage period (days)								
		0	3	7	11	15	25	42	120	320
0	—	97	96	94	97	95	96	93	96	92
1·0	10	65	66	63	57	54	57	49	28	6
1·0	20	53	52	56	45	43	44	27	18	1
1·125	10	25	27	22	18	18	19	12	6	0

* From a 10-day old culture.

For the evaluation of fungicides, spores possessing maximum resistance to the test fungicide should be used. With phenol and *P. notatum* and the experimental conditions described, spores from 5 to 10-day old cultures which may be stored in water at 4° for up to 7 days, are suitable.

REFERENCES

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