J. Mycopathol. Res. **42**(2) : 203-204 (2004)

Effect of hydrogen-ion concentration on growth of *Daedalea flavida*

TAPAN KUMAR MAITRA
Department of Botany, Ananda Mohan College, Kolkata 700 009.

Effect of hydrogen-ion concentration (pH) on the grwoth of *Daedalea flavida* was studied. Optimum pH for the best growth of both the primary and the secondary mycelia of the test fungus was found to be 6.5.

Key words : *Deadalea flavida*, pH, growth, primary and secondary mycelia

It is well-known that the hydrogen-ion concentration (pH) of the growing medium greatly influences all the metabolic processes of fungi (Cartwright and Findlay, 1943). Fungi have been found to withstand a wide range of pH. The pH value of the medium mostly influences the entry of essential vitamins, organic acids and various minerals.

The pH requirement for growth of wood-rooting fungi is found both in the acidic as well as in the alkaline conditions (Maechum, 1918 ; Lindenberg, 1944 ; Webb, 1919; 1922 ; Wolpert, 1924 ; Rannerfelt and Paris 1953 ; Samajpati, 1970). There has been no such study on *Daedalea flavida* Lev. Hence the present report.

The culture of *Daedalea flavida* Lev. was used in the present study. Growth analysis of the primary and the secondary mycelia was done using the Glucose Casein hydrolysate medium as suggested by Leonin and Lilly (1945).

The pH of the medium was adjusted to grades of 4.0, 4.5, 5.0, 5.5, 6.0, 6.5, 7.0, 7.5, 8.0, 8.5 and 9.0 with 0.2M Acetate and 0.2M Phossphate buffer before sterilization. An 25 ml aliquot of medium of each pH was dispensed in each 150 ml Pyrex Erlenmeyer flask, plugged and sterilized at 15 lbs. pressure for 15 minutes. The sterilized Erlenmeyer flasks were inoculated separately with 1.0 ml of cell suspension of test fungus separately and incubated stationary in complete darkness for 15 days at 30°C (±0.5°C). The mycelia were harvested by filtration through a tarred sintered funnel (Jena 1G–3) at an interval of 5 days. The filtered mycelium was washed repeatedly with distilled water to make it free from adherent nutrients and dried to a constant weight in a vaccum oven at 60°C for 24 h, cooled in a dessicator and weighed.

The data in Table 1 showed that at 6.5, the growth of the primary and secondary mycelia of *Daedalea flavida* was found to be maximum, though it could tolerate a wide range of pH grade both in the acidic and alkaline conditions. Among the different pH concentrations used under present study much less growth of the mycelia was also recorded in alkaline pH 9.0. Moreover, the growth of the mycelia of the fungus varied widely with medium used among themselves, with respect to their individual responses against each pH grade. All types of mycelia of the fungi grew well within the range of acidic (pH 5.5) to alkaline (pH 7.5) hydrogen-ion concentrations. The evidences so far obtained showed convincingly that pH is an environmental factor, of enormous important, in modifying the metabolic activity as their effects are always correlated in exhibiting the growth responses at different pH. However, our findings in the present

study are quite similar to the finding of Majumder (1975).

Table 1 : Effect of different hydrogen ion concentrations on vegetative growth (mg) of the primary and secondary mycelia of *Daedalea flavida* Lev. under different incubation period

Different Hydrogen ion concentrations	Dry wt. of mycelium (mg)[a] Incubation period (days)					
	5		10		15	
	P	S	P	S	P	S
4.0	13	13	23	26	29	36
4.5	16	19	29	36	35	49
5.0	22	24	36	41	46	57
5.5	29	31	50	67	58	69
6.0	33	39	53	62	65	76
6.5	44	61	69	88	89	113
7.0	46	36	60	59	73	64
7.5	37	25	55	52	62	52
8.0	28	21	37	38	53	48
8.5	23	12	31	23	47	29
9.0	11	6	14	19	20	22

[a] Data are mean of three replicates.
P = Primary mycelia ; S = Secondary mycelia.

REFERENCES

Cartwright, K. St. G. and Findlay, W. P. K. (1943). Timber Decay. *Bio. Rev.*, **18** : 145-158.

Leonin, L. H. and Lilly, V. C. (1945). The comparative value of the different test organisms in the microbiological assay of B. vitamins. *West Var. Agr. Expt. Sta. Bull.* 319.

Lindenberg, G. (1944). Uber die Physiologie Ligninabbanender Bodenbymenomy zelen, Studien and Schwedischea Marasmins. Arten. Sybolae botan. Upsalienses, **8**(2) : 1-183.

Meachum, M. R. (1918). Note upon the hydrogen ion concentration necessary to inhibit the growth of four wood destroying fungi. *Science,* **48** : 499-500.

Majumder, K. K. (1975). An investigation on certain aspects of biology of *Polyporus grammocephalus* Berk, associated with a disease of *Zizyphus mauritiana* Lam. Ph.D. Thesis, Calcutta University, Calcutta.

Rannerfelt, E. and Paris, S. K. (1953). Some physiological and ecological experiment with *Polyporus anussus* Fr. *Oikes,* **4**(1) : 58-76.

Samajpati, N. (1970). Studies on the physiology of higher fungi III. Effect of temperature, light and hydrogen-ion concentrtion on Spore Germination of *Fomes lividus* Kalch br. *Bull. Bot. Soc. Beng.* **24**(1-2) : 79-81.

Webb, R. W. (1919). Studies in the Physiology of fungi. X. Germination of the spores of certain fungi in relation of hydrogen-ion concentration. *Ann. Mo. Botan. Garden,* **6** : 201-222.

Webb, R. W. (1922). Studies in the Physiology of fungi. XV. Germination of the spores of centrin fungi in relation of hydrogen-ion concentration. *Ann. Mo. Botan. Garden,* **8**(3) : 283-341.

Wolpert, F. S. (1924). Studies on the physiology of fungi, XVIII. The growth of certain wood destroying fungi in relation to H-ion concentration of the media. *Ann. Missouri Bot. Gard.,* **11** : 43-97.

(Accepted for publication July 20, 2004)