
INFLUENCE OF HYDROGEN-ION
CONCENTRATIONS ON THE UTILIZA-
TION OF SODIUM NITRITE BY
DIPLODIA TYPHINA SACC. AND
BOTRYODIPLODIA THEOBROMAE
PAT.

RESEARCHES of various investigators including Ajello,¹ Gordon,² Cochrane³; Cochrane and Conn,⁴ Tandon and Bilgrami,⁵ as well as Chandra³ indicated the toxic effect of nitrite nitrogen to various fungi. Toxicity of this anion is closely related to the pH of the medium and is greater in the acidic medium. In the present investigation a detailed study was undertaken to study the effect of pH on the utilization of sodium nitrite by *Diplodia typhina* and *Botryodiplodia theobromae*. For this purpose potassium nitrate of Asthana and Hawker's medium A was replaced with 2.30 g. of sodium nitrite and thus the amount of

nitrogen was similar to that present in Asthana and Hawker's medium A. The medium was adjusted to different pH with the help of N/10 HCl and N/10 KOH. Both the organisms were allowed to grow at $25^{\circ} \pm 1^{\circ}$ C. for 15 days and the dry weight results are summarized in Table I.

TABLE I
Showing the dry weight of *D. typhina* and
B. theobromæ at different pH

Initial pH	<i>Diplodia typhina</i>		<i>Botryodiplodia theobroma</i>	
	Dry weight in mg.	Final pH	Dry weight in mg.	Final pH
2.5	0.0	2.5	0.0	2.5
3.2	0.0	3.2	0.0	3.2
4.2	0.0	4.2	0.0	4.5
5.2	0.0	5.2	0.0	5.2
6.1	19.6	6.8	16.4	7.0
6.8	35.2	7.3	37.9	7.5
7.6	49.3	8.2	49.7	8.5
8.5	31.2	8.0	28.6	7.8
9.0	16.6	8.6	18.7	8.5

Table I indicates that both the fungi could not grow in the medium adjusted to pH 2.5, 3.2, 4.2 and 5.2 but they grew at higher pH. Optimum growth of both these organisms was at pH 7.6. Their growth was less at pH 6.2 and 9.0. Due to metabolic activities the pH of the media originally adjusted up to 7.6 increased while there was a slight decrease in the case of those adjusted to 8.5 and 9.0.

It is thus quite evident that nitrite was toxic in the acidic medium only, where nitrites were in the form of undissociated nitrous acid. This result appears to be in conformity with the findings of Cochrane⁵; Cochrane and Conn⁴ and Nord and Mull.⁷ Utilization of sodium nitrite in alkaline media finds support from the work of Brock,² Tandon and Agarwal⁸ and Thind and Duggal.¹⁰ Efficient utilization of sodium nitrite at higher pH appears to be due to the fact that the formation of nitrous acid, which has toxic effect, is prevented under such condition.

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