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# GROWTH RESPONSE OF *BIPOLARIS TETRAMERA* (MCKINNEY) SHOEMAKER ON VARIOUS NUTRIENT MEDIA AND DIFFERENT TEMPERATURES

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The influence of different nutrient media and different temperatures (0°C – 40°C) was tested on growth and sporulation of *Bipolaris tetramera* (Mckinney) Shoemaker. It was observed that the maximum growth and excellent sporulation of the pathogen was obtained on Dox medium. The pathogen failed to grow on 0, 5, 10 and 40°C but the maximum growth and excellent sporulation of the pathogen was recorded on 25°C.

**Keywords :** *Bipolaris tetramera* (Mckinney) Shoemaker; Growth response; Nutrient media; Sporulation; Temperature.

A culture medium which will support good growth and good sporulation of various microorganisms will be very useful for their nutritional studies. Since there is no universal artificial medium on which all the fungi could grow, thus, it was tried to find out the most suitable medium for the test fungi. To have a thorough knowledge of temperature requirements, the effect of different temperatures on growth and sporulation of *B.tetramera* has been studied in the present investigation.

Single spore culture of *Bipolaris tetramera* obtained from the diseased fruits of *Coccinia indica,* was employed for the study[1]. Test pathogen was grown on natural medium, semi-synthetic medium and different synthetic media. 25ml of each liquid medium was poured in 150ml Erlenmeyer conical flask and autoclaved at 15 lbs pressure for 15 minuties. Fractional sterilization was carried out whenever the media contained substances liable to decomposition or denaturation. In order to study influence of various temperatures on the growth of pathogen, it was grown on Modified Asthana and Hawker's medium 'A' (basal medium) and incubated at different temperature for 15 days. Other methods used for calculating the dry weights of the fungal mat were similar to those described by Lal and Tandon[2].

**Table 1.** Average dry weight (in mg), sporulation and final pH of the medium when *Bipolaris tetramera* was grown on different media.

| Treatment No. | Medium | Initial pH of | Dry. wt. | Sporulation | Final pH the Media |
|---|---|---|---|---|---|
| 1. | Asthana and Hawker's Medium 'A' | 6.7 | 50.0 | P | 7.0 |
| 2. | Modified Asthana and Hawker's Medium 'A' | 5.5 | 103.33 | G | 9.0 |
| 3. | Coon's medium | 6.7 | 65.0 | P | 7.5 |
| 4. | Dox medium | 5.5 | 375.0 | E | 9.0 |
| 5. | Czapek's medium | 5.5 | 65.0 | F | 8.0 |
| 6. | Host decoction medium | 8.5 | 73.33 | G | 9.0 |
| 7. | Potato dextrose medium | 7.0 | 200.0 | G | 6.5 |
| | G.M. | | 133.0 | | |

Summary of the dry weight results and conslusions at 5% level of P.

| | |
|---|---|
| Replicates | Non significant |
| Treatments | Highly significant |
| Standard error | 4.08 |
| Critical Difference | ±7.16 |
| Treatment NOs. | 4>7>2>6>$\overline{3,5}$>1 |

**Table 2.** Average dry weight (in mg), sporulation and final pH of the medium when *Bipolaris tetramera* was grown at different temperatures.

| Treatment No. | Temperature °C | Dry wt. | Sporulation | Final pH |
|---|---|---|---|---|
| 1 | 0 | 0.0 | N | 5.5 |
| 2 | 5 | 0.0 | N | 5.5 |
| 3 | 10 | 0.0 | N | 5.5 |
| 4 | 15 | 21.66 | P | 6.5 |
| 5 | 20 | 28.33 | F | 6.5 |
| 6 | 25 | 61.66 | E | 7.0 |
| 7 | 30 | 60.0 | G | 6.5 |
| 8 | 35 | 48.33 | P | 6.5 |
| 9 | 40 | 0.0 | N | 5.5 |
| | G.M. | 24.44 | | |

The summary of the weight results and conclusion at 5% level of P.

| | |
|---|---|
| Replicates | Non significant |
| Treatments | Highly significant |
| Standard error | 1.92 |
| Critical difference | ±3.29 |
| Treatment NOs. | 6>7>8>5>4>$\overline{3,2,1,9}$ |

*Statistical Analysis:* ANOVA (Analysis of Variance) method "one way classification" was applied for performing the statistical analysis. Standard error (S.E.) and Critical difference (C.D.) at 5% level of probability was calculated[3].

*Test of significance :* Fisher Test (F test) was applied in order to test the significance of the results.

*Degree of sporulation:* On the basis of visual as well as microscopic observation, the degree of sporulation was classified into 5 categories i.e. nil (N), poor (P), fair (F), good (G) and excellent (E).

The test pathogen showed good growth on Dox and Potato dextrose medium while other media yielded poor growth of *B. tetramera,* as evident from the Table 1. Sporulation varied from poor to excellent on various media. Excellent sporulation was recorded on Dox medium.

The test pathogen could grow at a range of 15°C - 35°C. Degree of sporulation varied from nil to excellent on various temperatures. Excellent sporulation and maximum growth was recorded at 25°C temperature (Table 2).

The pathogen showed a shift in pH of the medium towards acidity at the end of incubation period in each treatment. These findings were at par those of Arya[4] and Srivastava[5].The findings presented in this communication reveals that the pathogen under study showed varied response on various media and at different temperatures and indicated the necessity of performing the detailed studies on nutritional and temperature requirements of *B. tetramera.*

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