# DETECTION OF GIBBERELLIN LIKE SUBSTANCE FROM AN ALGA, *LYNGBYA AERUGINEO – COERULEA* (KUTZ) GOMONT

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The presence of growth hormones in various taxa of algae has been widely reported (Augier, 1976). Mowat (1963) for the first time reported two components in the acidified fraction of marine phytoplanktons which gave gibberellin - like activity.

Recently the presence of gibberellin like substances, has been reported in *Plectonema boryanum* and in *Chlorella vulgaris* (Chauhan 1999a; 1999b). Since the presence of gibberellins in algae play an important role in growth and morphogenesis (Foltinova, 1987) it is necessary, to explore more blue-green algae for the presence of these substances. The present study was carried out in a blue-green alga, *Lyngbya aerugineo-coerulea* (Cyanophyceae, Nostocales, Oscillatoriaceae).

*L. aerugineo-coerulea* was grown for 3 weeks in modified Beneck's medium (De, 1939). Extraction of gibberellin - like substances was made by following the method earlier published (Russell, 1975; Chauhan, 1999a).

For bioassay studies, the silica gel from UV light sensitive areas was scrapped out and eluted with acetone. The elute was dried and the residue was dissolved in 0.5 ml distilled water and tested for its biological activity. For bioassay cucumber hypocotyl growth test ( Brian et al., 1964) and maize leaf sheath growth test (Phinney & West, 1961) were carried out. Ten seedlings were used for each treatment. Rf 0.2 - 0.3, 0.6-0.7 and 0.8 - 0.9 of ethyl acetate fraction and 0.5 - 0.6 of n-butanol fraction were biologically tested.

**Table 1. Rf values of the substances separated on Thin layer plates.**

| Fraction tested | Fluorescing behaviour | R f value |
|---|---|---|
| | White | 0.25 |
| Ethyl acetate | Yellow | 0.61 |
| | White | 0.86 |

**Table 2. Biological activity of gibberellin - like substance in two bioassay systems**

| Nature of fraction | Rf tested | Increase in length (cm) of seedlings | |
|---|---|---|---|
| | | Cucumber Hypocotyl Growth test | Maize Leaf Sheath Growth test |
| | 0.2 - 0.3 | 0.82 | 1.70 |
| EA | 0.6 - 0.7 | 3.44* | 2.03 |
| | 0.8 - 0.9 | 2.51 | 1.75 |
| B | 0.5 - 0.6 | 1.86 | 1.75 |
| Control | - | 1.84 | 1.65 |
| | LSD (0.05) | 1.0565 | NS |

EA = Ethyl acetate ; B = n-Butanol ; * = Significant ; NS = Nonsignificant ; Each figure is mean of length of 10 seedlings.

The fluorescing behaviour of different spots and their Rf values are given in Table 1. The elute from Rf 0.6-0.7 of ethyl acetate fraction showed a significant increase in the length of cucumber hypocotyls (Table 2) indicating thereby the presence of gibberellins. The increase in the length of maize leaf sheath was, however, not statistically significant. The elute from Rf 0.5-0.6 of n-butanol fraction has no marked effect in both the bioassays. It is likely that in this fraction the gibberellins are present in bound form (Yokota et al., 1971).

These results are in conformity with Rai & Laloraya (1967). It is clear from the foregoing that cucumber hypocotyl test proved good in these studies.

The n-butanol fraction has not given any positive response in both the bioassay systems. It may in part be due to the presence of bound gibberellins in this fraction (Yokota et al., 1971). At the same time positive biological response given by ethyl acetate fraction may be due to the presence of free gibberellins.

## References

Augier, H. 1976 Less phytohormones des algues. Etat actual des connaissances : II - Reserche et tentatives d' identification des gibberellines, des cytokinines et de diverses autres substances de nature hormonale. *Bot. Mar.*, 19 : 245 - 254.