



IN VITRO EVALUATION OF GROWTH AND YIELD OF *Zea mays* IN THE PRESENCE OF *Kappaphycus alvarezii* EXTRACT

Jaime Borges Pereira¹, *Gizelle Inácio Almerindo², Rodolfo Moresco¹.

¹Biological Sciences, Universidade do Vale do Itajaí, Brazil. ²Post Graduate Program in Pharmaceutical Sciences, Universidade do Vale do Itajaí, Brazil.

*jaime.pereira@edu.univali.br.

INTRODUCTION

The search for sustainable alternatives to chemical fertilizers has encouraged the use of seaweed-based biofertilizers. *Kappaphycus alvarezii*, a red seaweed rich in carrageenan, amino acids, and bioactive compounds, shows promising agronomic potential. Recently authorized for commercial cultivation in the state of Santa Catarina (Brazil), this species represents a viable alternative for more sustainable agriculture. This study aimed to evaluate the effects of *K. alvarezii* liquid extract on the germination and vegetative development of maize (*Zea mays*), a crop of strategic importance for food security and the bio-based industry.

MATERIAL AND METHODS

Biomass of *K. alvarezii* was collected in Penha-SC, desalinized using ammonium formate, lyophilized, and ground to 32 mesh granulometry. The extract was prepared at 100% concentration and diluted to obtain 50% and 25% concentrations. Germination tests were conducted in Petri dishes with germitest paper moistened with the solutions. Germination potential (PG) and germination speed index (GSI) were evaluated in a BOD-type germination chamber for 14 days. For vegetative development analysis, maize seeds were cultivated in trays with commercial substrate and sprayed with the extract

every three days for 18 days. Parameters analyzed included leaf area, seedling length, fresh and dry biomass. Data were subjected to ANOVA followed by Tukey's test ($p < 0.05$).

RESULTS

The results showed that *K. alvarezii* extract had no significant effect on PG and GSI at any tested concentration. However, a tendency for germination inhibition was observed at higher concentrations (50% and 100%), possibly due to the viscosity of the medium caused by carrageenan. In the vegetative phase, foliar spray application of the 100% extract significantly increased leaf length compared to the control and the 25% concentration. Both fresh and dry biomass were also higher at this concentration, although no significant differences were observed in leaf area among treatments.

CONCLUSIONS

Kappaphycus alvarezii extract demonstrated potential as a foliar biofertilizer, promoting vegetative growth in maize. However, direct application to seeds requires lower concentrations to avoid inhibitory effects. Further studies are recommended to evaluate different dosages and application intervals to better understand the agronomic potential of this biofertilizer.

