

Effect of *Chlorella* as a biofertilizer on germination of tomato and cucumber seeds**Научный руководитель – Noj Buyankhishig Tumen*****Bumandalai Odgerel****Graduate (master)*

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Although inorganic fertilizers are known for its harmful effect on both human health and environment, many agricultural sectors have been using them for decades [4]. In this regard, organic fertilizers have become alternative sources. The utilization of beneficial microbes as a biofertilizer has become major concern in industrial agriculture for their potential role in food safety and sustainable crop production [6]. Algae are considered as a potential biofertilizers due to the presence of macronutrients and micronutrients, some growth regulators, polyamines, natural enzymes, carbohydrates, proteins and vitamins that are implemented for improving vegetative growth and yield [3,5]. In this study, we examined the effect of *Chlorella* strain on germination of tomato and cucumber seeds. Seeds were germinated in culture medium containing microalgal strain and grown for 3, 6, 9 and 12 days in order to study its effect on growth parameters. Growth of *Chlorella* strain was measured in terms of cell number and dry weight biomass.

As a result, the growths of tomato shoot and root at day 9 (0.17 g/L concentration of algal suspension) were the highest (44.6 mm and 17.4 mm, respectively) among all. The lengths of shoots were longer than that of control at days 3 and 6, except day 12. The lengths of roots at day 6 and 12 were close to that of control, however at day 3 and 9, the lengths of root were 43.3% and 87.9% longer than that of control. For cucumber seeds, the lengths of shoot were close to that of control at day 3, 6 and 9. The lengths of root were 51.8% and 94% longer than that of control at day 6 and 9. The highest lengths of shoot and root were obtained at day 12, which were 2.1 and 2.3 times higher than that of control, respectively.

The application of microalgal suspension led to increase in growth of root in tomato under lab condition. This phenomenon was previously observed in other researchers' studies [1]. *Chlorella* cultures were also tested on cucumber plant and the result showed that it can enhance the rate of germination in cucumber [2]. It can be concluded that *Chlorella* suspension can enhance the germinations of tomato and cucumber seeds. Algal suspensions of 0.17 g/L and 0.25 g/L can improve the root and shoot lengths of tomato and cucumber seeds, respectively.

References

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