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# Efek Jamur Mikoriza *Glomus intraradices* terhadap Pertumbuhan *Tagetes erecta L.* pada Media Tanam Mengandung Kromium

# The Effect of Mycorrhizal Fungi *Glomus intraradices* on the Growth of *Tagetes erecta L.* in Growth Media Containing Chromium

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Abstract: *Tagetes erecta* is an annual plant that is, in addition, to be used as an ornamental plant, it can also be used as an agent for phytoremediation. *Glomus intraradices* is one of the species of vesicular-arbuscular mycorrhizal (VAM) fungi which can be mutually symbiotic with various species of plants, including *T. erecta*. This study was aimed to determine the effect of VAM fungi *G. intraradices* on the growth of *T. erecta* in growth media containing chromium. The study was carried out experimentally using a completely randomized design with treatments, namely $Cr^{6+}$ concentrations of 0, 5 and 10 ppm in the form of $K_2CrO_7$, and the addition of VAM fungi *G. intraradices* in the growth media in the form of soil and mixture of soil: textile sludge (1: 1). *T. erecta* was grown in four different growth media (soil, soil: textile sludge (1:1), soil+VAM, soil: textile sludge (1:1)+VAM) that was treated with $Cr^{6+}$ and *G. intraradices* for 1.5 months. The growth of *T. erecta* was determined based on plant height, root length, root dry weight, shoot dry weight, and percentage of mycorrhizal infection. Data were analyzed with two-way Analysis of Variance (two-way ANOVA) and DMRT (Duncan's Multiple Range Test) with a test level of 5%. The results showed that the growth of *T. erecta* in media containing $Cr^{6+}$ (5 and 10 ppm) decreased significantly compared to controls (without $Cr^{6+}$ treatment). The highest reduction of plant growth was found in media containing $Cr^{6+}$ of 10 ppm. The addition of VAM fungi *G. intraradices* in soil media and soil: textile sludge that treated with $Cr^{6+}$ was able to increase the growth of *T. erecta*. These results indicated that the VAM fungi *G. intraradices* were able to improve the ability of *T. erecta* to deal with chromium heavy metal stress. That results were also supported by the percentage of mycorrhizal infection in the roots of *T. erecta* grown in soil and soil: textile sludge (1:1) media with treatments of $Cr^{6+}$ and VAM *G. intraradices* were higher than the control plants that was grown in soil and soil: textile sludge (1:1) media without treatments of $Cr^{6+}$ and VAM *G. intraradices*.

Keywords: *Tagetes erecta*, *Glomus intraradices*, phytoremediation, vesicular-arbuscular mycorrhizal, fungi

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