

## Improvement of Total Phenolic Contents and Anti-oxidative Properties of Ricegrass (*Oryza sativa* L.) using Selenium Bio-fortification

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**Abstract :** Ricegrass or young rice sprouts can be introduced as one of functional product since cereal sprouts have been much interested in this era due to their high nutritive values. Bio-fortification of selenium is one strategy to improve plant bioactive compounds. However, the level of selenium used are varied among species of plants, hence, the proper level need to be investigated. In this current study, influence of selenium bio-fortification hydroponically in the form of sodium selenite following the range 0, 10, 20, 30 and 40 mg Se/L on growth characteristics, selenium content, total extractable phenolic content (TPC) accumulation, lipid peroxidation and anti-oxidative properties of ricegrass were investigated. Results revealed that selenium bio-fortified exogenously increased the accumulation of selenium in ricegrass by 5.3 fold at 40 mg Se/L treatment without significant changes in leaves biomass at harvesting day while root part weight were slightly decreased when increased selenium level, respectively. Selenium at low concentration (10 and 20 mg Se/L) can stimulate the production of phenolic compounds and antioxidant activities in young ricegrass as measured by DPPH, ABTS and FRAP assay. Conversely, higher level of selenium fortification reduced the accumulation of phenolics in ricegrass afterward by acting as pro-oxidant. Moreover, highest significant reduction in oxidative stress, measured as malondialdehyde content was also observed at 20 mg Se/L treatment which in correlation to high TPC and antioxidant activities. In conclusion, selenium bio-fortification can be used as a technique to improve precious to ricegrass.

**Keywords :** antioxidant activities, bio-fortification, ricegrass, selenium

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