

## **Comparative Study of Antioxidant Activity in in vivo and in vitro Samples of Purple Greater Yam (*Dioscorea alata* L).**

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**Abstract :** Antioxidants are compounds that protect cells against the damaging effects of reactive oxygen species such as singlet oxygen, superoxide, peroxy radicals, and peroxy nitrite which result in oxidative stress leading to cellular damage. Natural antioxidants are in high demand because of their potential in health promotion and disease prevention and their improved safety and consumer acceptability. Plants are rich sources of natural antioxidants. *Dioscorea alata* L. known as 'ubi badak' in Malaysia were well known for their antioxidant content, but this plant was seasonal. Thus, tissue culture technique was used to mass propagate this plant. In the present work, a comparative study between in vitro (from tissue culture) and in vivo (from intact plant) samples of *Dioscorea alata* L. for their antioxidant potential by 2,2-diphenyl-1-picrylhydrazyl (DPPH) radical scavenging activity method and their total phenolic and flavonoid contents were carried out. All samples had better radical scavenging activity but in vivo samples had the strongest radical scavenging activity compared to in vitro samples. Furthermore, tubers from in vivo samples showed the greatest free radical scavenging effect and comparatively greater phenolic content than in vitro samples.

**Keywords :** *Dioscorea alata*, tissue culture, antioxidant, in vivo, in vitro, DPPH

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