

# **Influence of Drought on Oxidative Stress and Flavonoid Production in Cell Suspension Culture of *Glycyrrhiza inflata Batal***

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The effect of water deficit on flavonoid production and physiological parameters characteristic for oxidative stress were studied in a cell suspension culture of *Glycyrrhiza inflata Batal* to investigate its drought tolerance. The result indicated that appropriate water deficit enhanced biomass accumulation of  $27.1 \text{ g L}^{-1}$  and flavonoid production of  $151.5 \text{ mg L}^{-1}$ , which was about 2-fold and 1.5-fold of the control, respectively. But it decreased the water content. Drought stress led to hydrogen peroxide accumulation more than in the control. Moreover, under drought conditions, malondialdehyde content, the activities of catalase and peroxidase increased to a greater extent than the control, and each reached a maximum value of  $91.3 \mu\text{mol g}^{-1}$  dry weight, 85.6 U and  $1951 \text{ U g}^{-1}$  dry weight per min, which was 1.5-, 1.7- and 3.7-fold of the control, respectively. All above showed that appropriate water deficit could activate the antioxidative defense enzymes system to maintain stability in plants subjected to drought stress. On the contrary, the activity of phenylalanine ammonia lyase of the control increased in company with the biosynthesis of flavonoids, which indicated that phenylalanine ammonia lyase might play an important role in the path of the biosynthesis of flavonoids.

*Key words:* Drought, Flavonoid Production, *Glycyrrhiza inflata Batal*