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Effect for Hepatoprotective Activities from *Cirsium setidens* NAKAI

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Objectives

The antioxidant activity and hepatoprotective potential of *Cirsium setidens* Nakai, a widely used medicinal plant, were investigated. The *n*-butanol (*n*-BuOH) fraction of leaves and roots of *C. setidens* had higher 1,1-diphenyl-2-picrylhydrazyl (DPPH) radical scavenging activity than other soluble fractions. The *n*-BuOH fraction of roots of *C. setidens* had significant hepatoprotective activity at a dose of 500 mg/kg when compared with that of a standard agent. The biochemical results were confirmed by histological observations indicating that *C. setidens* extract decreased ballooning degeneration in response to CCl_4treatment. The *n*-BuOH fraction reduced CCl_4-induced liver injury in rats, and transcript levels of genes encoding antioxidant enzymes such as glutathione peroxidase 1 (GPO1), glutathione peroxidase 3 (GPO3) and superoxide dismutase (SOD1) were elevated in the livers of rats treated with this fraction(500 mg/kg). Based on these results, we suggest that the *C. setidens* extract is hepatoprotective effect related to its antioxidant activity.

Material and Method

○ Material :

- Plant material and preparation of crude extracts: Roots and leaves of *Cirsium setidens* Nakai

○ Method :

- *DPPH free radical scavenging assay.*

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- Carbon tetrachloride-induced hepatotoxicity.
- ssay of serum GOT and GPT activities.
- Histopathological examination of the liver.
- Isolation of cDNAs of genes related to antioxidant activity by reverse transcriptase-PCR (RT-PCR).

Results and Discussion

1. The *n*-hexane-, $CHCl_3$-, EtOAc-, *n*-BuOH- and H_2O-soluble fractions of *C. setidens* leaves also exhibited moderate antioxidant activity
2. Five hundred milligrams per kilogram of the *n*-BuOH fraction of *C. setidens* roots had a significantly greater effect than silymarin, which was used as a positive control
3. Altered levels of transcripts of glutathione peroxidase 1 (GPO1), glutathione peroxidase 3 (GPO3) and superoxide dismutase (SOD1) were observed in the livers of rats treated with CCl_4 and the *n*-BuOH fraction, with strong expression of these genes upon treatment with the *n*-BuOH fraction (500 mg/kg).

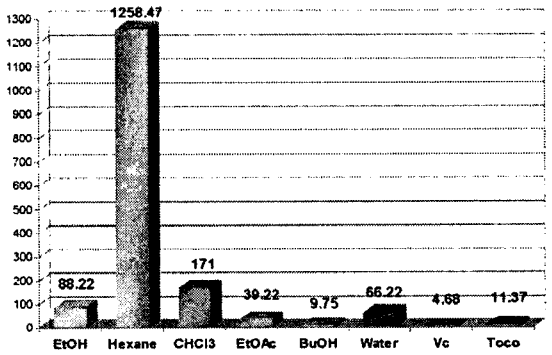

Fig. 1. Antioxidant activity of solvent fractions from the root in Cirsium setidens Nakai on DPPH radical scavenging method.

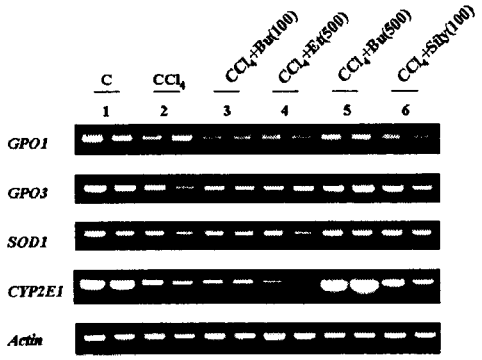

Fig. 2. RT-PCR analysis involved in antioxidant enzymes in liver RNA