

[P-40]**Garlic Oil and DDB, Comprised in a Pharmaceutical Composition for the Treatment of Patients with Viral Hepatitis, Prevents Acute Liver Injuries Potentiated by Glutathione Deficiency in Rats**

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A pharmaceutical composition PENNEL comprising garlic oil (GO) and dimethyl-4,4'-dimethoxy-5,6,5',6'-dimethylene dioxybiphenyl-2,2'-dicarboxylate (DDB) as ingredients active for phase II enzyme induction and liver protection, respectively, has been used as a curative preparation for patients with acute or chronic viral hepatitis. In spite of the wide clinical use of PENNEL in Asian and Middle Eastern countries, whether GO+DDB treatment synergistically protects the liver from injuries potentiated by GSH deficiency compared to the individual treatment has not been determined. This study investigated the effects of GO+DDB in comparison with each ingredient alone on chemical-induced liver injury potentiated by a GSH depleting agent. Rats that had been daily pretreated with GO+DDB, GO, DDB, ursodesoxycholic acid or silymarin for 6 days were exposed to buthionine sulfoximine (BSO) and then injected with a single dose of CCl₄. The effects of the agents on acute liver toxicities induced by BSO, CCl₄ or BSO+CCl₄ were assessed by blood biochemistry and histopathology. GO+DDB pretreatment effectively prevented increases in plasma aminotransferases or lactate dehydrogenase activities in rats exposed to BSO+CCl₄, compared to GO or DDB treatment alone. Whereas BSO potentiated CCl₄-induced liver injuries as evidenced by elevations in central necrosis, hepatocyte degeneration and inflammation, pretreatment with GO+DDB abrogated BSO+CCl₄-induced liver injuries more efficaciously than did that with GO or DDB. The hepatoprotective effect of GO+DDB was superior to that of ursodesoxycholic acid or silymarin. Also, blood biochemistry indicated that GO+DDB pretreatment prevented increases in plasma triglyceride contents in rats in-

sulted with CCl₄ or BSO+CCl₄. The present study demonstrated that GO+DDB, when daily pretreated for 6 consecutive days, exerted synergistic protection of the liver from chemical-induced injury potentiated by the condition of GSH deficiency, and has additional advantages in lowering the plasma lipids.

Keyword: PENNEL, GO, DDB