1. Some clinical trials used glycyrrhizic acid or its derivatives.

There have been several clinical studies of glycyrrhizic acid and glycyrrhetinic acid derivatives to determine the pharmacological activity of those compounds. We will mention some of those studies in **Table 1**

Table 1. Some clinical studies of the derivatives of glycyrrhizic acid and glycyrrhetinic acid

Experimental dosage form and duration usage	Disease type	Efficacy	Ref
Glycyrrhizin 60 mg per day for 7 days was given with oral Lamivudine 100 mg daily.	Subacute hepatitis due to Hepatitis B and E	This mode of therapy may reduce the duration of morbidity and the probability of the immediate complication of subacute hepatic failure and the long-term complication of chronic hepatitis.	[1]
Glycyrrhizinic ammonium salt 300mg with sodium capric acid 60 mg, suppository,2supp/day for 12weeks	CHC	This type of medication can be used to treat chronic hepatitis disease via decreasing the ALT level and improving the quality of life for chronic hepatitis C patients.	[2]
Glycyrrhizin with Tenofovir 300mg. (Group A) treated with tenofovir 300 mg per day in combination with i.v glycyrrhizin for ten days. (Group B) treated with monotherapy of tenofovir 300 per day for ten days.	chronic hepatitis B (CHB)	The combination therapy between glycyrrhizin and tenofovir can significantly lower serum transaminases rapidly than tenofovir alone in the first two weeks. Glycyrrhizin can significantly improve the model for end-stage liver disease (MELD) score.	[3]
Glycyrrhizin With A generic drug (Neophagen) is used as	Chronic hepatitis C	This combination of therapy can act as synergistic action to	[4]

a continuous treatment during a limited period.		treat the CHC by decreasing the ALT level.	
Glycyrrhizin 100 ml - iv once daily for 20 days. (Controlled group A) treated with routine therapy for 20 days. (Treated group B) treated with glycyrrhizin 100ml-once daily-20days.	acute hepatitis B with acute liver failure (ALF)	The results showed that the liver function and effective rate are better in the treated group than in the controlled group.	[5]
Magnesium isoglycyrrhizinate 200 mg once daily for three weeks.	Autoimmune hepatitis cirrhosis	This compound is more effective and safer at controlling inflammation activity in autoimmune hepatitis cirrhosis in the discompensation stage.	[6]
Glycyrrhizin with ligustrazine. (Controlled group A) was treated intravenously with ligustrazine only. (Treated group B) was treated with ligustrazine and glycyrrhizin.	Chronic hepatitis B	Glycyrrhizin combined with ligustrazine exerts a more potent effect of resisting hepatic fibrosis. There is no significant difference between the two groups in each hepatic function index.	[7]
Magnesium isoglycyrrhizinate (Controlled group A) was treated intravenously with 120mg Glycyrrhizin diluted with 250ml of 5% glucose injection once daily for 28 days. (Treated group B) was treated with 150 mg of magnesium	Chronic severe hepatitis B	Compared with the control group, the Bil, PTA, ALT, and AST were significantly better in the treatment group ($p<0.01$). Magnesium Isoglycyrrhizinate reduces weariness, abdominal distension, and low appetite in chronic severe hepatitis B patients and improves liver function.	[8]

isoglycyrrhizinate daily for 28 days.			
Glycyrrhizin intravenously administered three or six times per week.	chronic hepatitis C	In patients with chronic hepatitis C, glycyrrhizin therapy causes a considerable decrease in ALT. Treatment six times per week appears to be more beneficial than treatment three times per week.	[9]

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