

# **Inhibition TGF- $\beta$ pathway to prevent cardiac fibrosis of SHSST cyclodextrin complex on cirrhotic-cardiomyopathy rat hearts**

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## **Abstract**

Patients with liver cirrhosis also have subtle abnormalities of cardiac structure or function, and this cardiac dysfunction happens commonly in 56% of waiting orthotopic liver transplantation (OLT) patients and was defined as cirrhotic cardiomyopathy (CCM). Up to now, there is no standard treatment because CCM does not have a solidly established diagnosis and is based on high clinical suspicion. Particularly, the liver function is very limited of CCM patients to suffer more drugs treatments. Here, we use silymarin (100mg/kg/day), baicalein (30mg/kg/day), San Huang Shel Shin Tang (SHSST, 30mg/kg/day) and  $\beta$ -cyclodextrin modified SHSST (SHSSTc, 30mg/kg/day and 300mg/kg/day) treatments for CCl<sub>4</sub>-induced CCM rat model. As the results shown that silymarin, baicalein and SHSST treatments can only slightly reduced the collagen acumination in CCM rat hearts. But SHSSTc treatment protect the heart in CCM and inhibited collagen acumination significantly and also inhibited the fibrosis regulate transforming growth factor (TGF- $\beta$ ) pathway expressions. SHSSTc treatments further reduced the heart weight and the ratio between left vestibular weight (LVW) and tibia length (TL). These experimental evidences shown the water solubility improved  $\beta$ -cyclodextrin modified Chinese herbal medicine formula (SHSSTc) can provide an excellence heart protection effect through TGF- $\beta$  pathway inhibition.

**Keywords:** TGF- $\beta$  pathway, cardiac fibrosis, San Huang Shel Shin Tang; cirrhotic cardiomyopathy