



## Shou Wu Pian

Updated: January 2, 2014.

## OVERVIEW

### Introduction

Shou Wu Pian is an herbal product derived from the root tuber of *Polygonum multiflorum*, which has been used for centuries as a treatment for a wide range of conditions including backache, dizziness, graying of the hair and constipation. Shou Wu Pian has been implicated in several reports of clinically apparent acute liver injury.

### Background

Shou Wu Pian (*Polygonum* tablets) is a commonly used and ancient Chinese herbal remedy prepared from the root of the tuber, *Polygonum multiflorum*, known as the Chinese climbing knotweed (Fo Ti). Fo Ti is a plant native to China, but has been cultivated widely elsewhere. Extracts of the roots of *Polygonum multiflorum* have been used for centuries in traditional Chinese medicine for a multitude of conditions and as an agent to prevent aging. Some of the historical uses include cancer, tuberculosis, diabetes, hypertension, infections, erectile dysfunction, infertility, and muscle soreness. It is also used as a tonic in liver and kidney conditions and to fortify muscles and bones. The extract has been marketed as a pill and claimed to be beneficial for headache, dizziness, graying of the hair, constipation and liver disease. Shou Wu can also be brewed in teas, and extracts are used in topical creams or ointments for skin conditions and muscle soreness. The active components of Shou Wu Pian are believed to be anthraquinones including chrysophanol, emodin and rhein. Anthraquinones may also account for its effect in constipation, but may also account for its hepatotoxicity. Various oral formulations are available and it is also taken as a tea using extracts of dried *Polygonum* roots. Common side effects are abdominal pain, diarrhea, nausea and vomiting.

### Hepatotoxicity

Several published cases and a large case series of clinically apparent acute liver injury have been attributed to use of Shou Wu Pian (*Polygonum multiflorum*). The latency to onset is usually short, but ranges from a few days to as long as 6 months. The pattern of serum enzyme elevations is typically hepatocellular or mixed and the clinical presentation resembles acute viral hepatitis with onset of fatigue, nausea and right upper quadrant pain followed by jaundice. Immunoallergic features are rare as are autoantibodies. Liver biopsy shows changes typical of acute hepatitis. The course is usually self-limited, resolving rapidly once the herbal is discontinued, but at least two cases have been fatal or led to emergency liver transplantation. Recurrence upon reexposure with a more rapid time to onset has been reported.

## Mechanism of Injury

The mechanism of hepatotoxicity of Shou Wu Pian is not known, but the injury is usually attributed to the anthraquinones (such as emodin) which are major constituents in *Polygonum multiflorum*. In a single report, the major compound identified in the recovered tablets was a stilbene glycoside, tetrahydroxystilbene-glucopyranoside.

## Outcome and Management

Hepatotoxicity from Shou Wu Pian is usually self-limited, but can be prolonged and is occasionally fatal. Recurrence with restarting the herb is common and rechallenge should be avoided. There is little evidence for cross sensitivity to the hepatotoxic effects of other herbal medications.

Other Names: Fo Ti, Chinese knotweed, Chinese cornbind, Ho Shou Wu, Shen Min, Zi Shou Wu

Drug Class: [Herbal and Dietary Supplements](#)

Other herbals in the Subclass [Chinese and Other Asian Herbal Medicines](#): [Ba Jiao Lian](#), [Bol Gol Zhee](#), [Chi R Yun](#), [Jin Bu Huan](#), [Ma Huang/Ephedra](#), [Sho Saiko To](#) and [Dai Saiko To](#)

## CASE REPORT

### Case 1. Recurrent hepatitis due to Shou Wu Pian.

[Modified from: Panis B, Wong DR, Hooymans PM, De Smet PAMG, Rosias PPR. Recurrent toxic hepatitis in a Caucasian girl related to the use of Shou Wu Pian, a Chinese herbal preparation. *J Pediatr Gastroenterol Nutr* 2005; 41: 256-8. [PubMed Citation](#)]

A 5 year old girl developed jaundice and dark urine 4 months after her parents started her on Shou Wu Pian (3 tablets daily) for hair loss. She was otherwise healthy, with normal growth and development and no history of liver disease or risk factors for viral hepatitis. She was taking no conventional medications and her family initially did not mention the herbal use. Physical examination showed jaundice and mild hepatomegaly without fever, rash, abdominal tenderness or splenomegaly. Laboratory results showed raised serum bilirubin levels (4.9 mg/dL), and elevations in serum aminotransferases (ALT 1543 U/L, AST 1938 U/L) and gamma-glutamyl transpeptidase levels (GGT 67, normal <17 U/L). Tests for hepatitis A, B and C were negative as were tests for cytomegalovirus and Epstein Barr virus infection. Abdominal ultrasound showed normal liver and biliary tract. Liver tests improved without specific therapy and one month later liver tests were normal (Table). However, she returned with recurrence of jaundice 2 months later and at this point the history of herbal use was obtained. After recovering from the initial liver injury, the Shou Wu Pian was restarted at a lower dose (2 tablets per day) and she redeveloped jaundice within a month of restarting. She again began to improve once the herbal medication was stopped, but liver test abnormalities did not completely resolve until 5 months later. Analysis of residual tablets of the Shou Wu Pian demonstrated the stilbene glycoside, tetrahydrostilbine-glucopyranoside, as the major constituent with only trace amounts of anthraquinones.

## Key Points

Medication:	Shou Wu Pian (3 tablets daily)
Pattern:	Hepatocellular (R=9.8, using GGT instead of alkaline phosphatase)
Severity:	3+ (jaundice, hospitalization)
Latency:	16 weeks initially, 4 weeks on reexposure
Recovery:	4 weeks initially, 21 weeks on reexposure

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Other medications:	None
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## Laboratory Values

Time After Starting	Months After Stopping	ALT (U/L)	GGT (U/L)	Total Bilirubin (mg/dL)	Other
Shou Wu Pian taken for hair loss for 4 months					
4 months	0	1543	67	4.9	
5 months	1 months	50	21	0.4	
Shou Wu Pian restarted for 1 month					
7 (1) months	0	1277	98	3.7	
(2) months	1 months	65	23	0.5	
(6) months	5 months	35	9	0.5	
<b>Normal Values</b>		<b>&lt;40</b>	<b>&lt;17</b>	<b>&lt;1.2</b>	

## Comment

The case history is somewhat typical of herbal induced liver injury, in that the family did not inform the physicians that the child was receiving Shou Wu Pian and did not consider it harmful or imagine that it was the cause of the hepatitis. The clinical features resembled acute hepatitis, but the recurrence (with a shorter latency) on restarting the herbal makes this a convincing case for Shou Wu Pian induced acute liver injury.

## PRODUCT INFORMATION

### REPRESENTATIVE TRADE NAMES

Shou Wu Pian – Generic

### DRUG CLASS

Herbal and Dietary Supplements

## CHEMICAL FORMULA AND STRUCTURE

DRUG	CAS REGISTRY NUMBER	MOLECULAR FORMULA	STRUCTURE
Shou Wu Pian	No Information	Herbal mixture	Not applicable

## ANNOTATED BIBLIOGRAPHY

References updated: 02 January 2014

Zimmerman HJ. Unconventional drugs. Miscellaneous drugs and diagnostic chemicals. In, Zimmerman, HJ. Hepatotoxicity: the adverse effects of drugs and other chemicals on the liver. 2nd ed. Philadelphia: Lippincott, 1999: pp. 731-4.

*(Expert review of hepatotoxicity published in 1999; hepatotoxicity of Chinese herbal products and teas are discussed generally without focus on Shou Wu Pian).*

- Seeff L, Stickel F, Navarro VJ. Hepatotoxicity of herbals and dietary supplements. In, Kaplowitz N, DeLeve LD, eds. Drug-induced liver disease. 3rd ed. Amsterdam: Elsevier, 2013, pp. 631-58. (*Review of hepatotoxicity of herbal and dietary supplements [HDS] discusses Chinese and other Asian herbal medicines including Shou Wu Pian*)
- Carlsson C. Herbs and hepatitis. Lancet 1990; 336: 1068. PubMed PMID: 1977040.
- (*Analysis of laboratory results from 395 patients found higher ALT levels among 53 patients taking herbals [55 U/L] than among those who did not [12 U/L]*).
- But PP, Tomlinson B, Lee KL. Hepatitis related to the Chinese medicine Shou-wu-pian manufactured from Polygonum multiflorum. Vet Human Toxicol 1996; 38: 280-2. PubMed PMID: 8829347.
- (*31 year old woman from Hong Kong developed jaundice several weeks after starting Shou Wu Pian for hair loss [bilirubin 4.0 rising to 6.1 mg/dL, ALT 870 U/L, Alk P 108 U/L], resolving within 3 weeks of stopping*).
- Park GJH, Mann SP, Ngu MC. Acute hepatitis induced by Shou-Wu-Pian, a herbal product derived from Polygonum multiflorum. J Gastroenterol Hepatol 2001; 16: 1062-4. PubMed PMID: 11206309.
- (*46 year old woman developed pruritus and jaundice 2 weeks after starting Shou Wu Pian [bilirubin 12.6 mg/dL, ALT 876 U/L, Alk P 185 U/L], resolving within a month of stopping*).
- De Smet PAGM. Herbal remedies. N Engl J Med 2002; 347: 2046-56. PubMed PMID: 12490687.
- (*Review of status and difficulties of herbal medications including lack of standardization, federal regulation, contamination, safety, hepatotoxicity and drug-herb interactions; specific discussion of 4 herbs with therapeutic promise: ginkgo, hawthorn, saw palmetto and St. John's wort*).
- Ernst E. Adulteration of Chinese herbal medicines with synthetic drugs: a systematic review. J Intern Med 2002; 252:107-13. PubMed PMID: 12190885.
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- Battinelli L, Daniele C, Mazzanti G, Mastroianni CM, Lichtner M, Coletta S, Costantini S. New case of acute hepatitis following the consumption of Shou Wu Pian, a Chinese herbal product derived from Polygonum multiflorum. Ann Intern Med 2004; 140: W30. PubMed PMID: 15069011.
- (*78 year old man developed jaundice 1 month after starting Shou Wu Pian for chronic prostatitis [bilirubin 25.5 mg/dL, ALT 1276 U/L, Alk P 409 U/L], resolving rapidly upon stopping*).
- Panis B, Wong DR, Hooymans PM, De Smet PAMG, Rosias PPR. Recurrent toxic hepatitis in a Caucasian girl related to the use of Shou-Wu-Pian, a Chinese herbal preparation. J Pediatr Gastroenterol Nutr 2005; 41: 256-8. PubMed PMID: 16056110.
- (*5 year old girl developed jaundice 4 months after being started on Shou Wu Pian [bilirubin 4.9 mg/dL, ALT 1543 U/L, Alk P normal], resolving within 5 weeks and recurring within 4 weeks of restarting, resolving this second time only after 5 months: Case 1*).
- Cardenas A, Restrepo JC, Sierra F, Correa G. Acute hepatitis due to shen-min: a herbal product derived from Polygonum multiflorum. J Clin Gastroenterol 2006; 40: 629-32. PubMed PMID: 16917407.
- (*28 year old woman developed fatigue followed by jaundice 8 weeks after starting Shen-Min for hair loss [bilirubin 12.3 mg/dL, ALT 2922 U/L, Alk P 153 U/L], resolving within 4 weeks of stopping the herbal*).
- Seeff LB. Herbal hepatotoxicity. Clin Liver Dis 2007; 11: 577-96. PubMed PMID: 17723921.

*(Review of herbal induced hepatotoxicity, with a review of Chinese herbal medicines such as Chaso, Onshido, Sho-saiko-to, Jin Bu Huan, Ma Huang and Shou Wu Pian).*

Chitturi S, Farrell GC. Hepatotoxic slimming aids and other herbal hepatotoxins. *J Gastroenterol Hepatol* 2008; 23: 366-73. PubMed PMID: 18318821.

*(Review of hepatotoxicity of herbal medications focusing upon those used for weight loss, including nitrosofenfluramine, usnic acid, ephedra, germander, skullcap and green tea; other herbs discussed include Shou Wu Pian).*

Laird AR, Ramchandani N, deGoma EM, Avula B, Khan IA, Gesundheit N. Acute hepatitis associated with the use of an herbal supplement (Polygonum multiflorum) mimicking iron-overload syndrome. *J Clin Gastroenterol* 2008; 42: 861-2. PubMed PMID: 18580499.

*(35 year old man developed jaundice “several months” after starting “NuHair” [containing Polygonum multiflorum] for hair loss [bilirubin 4.6 rising to 13.7 mg/dL, ALT 2714 U/L, Alk P 137 U/L, INR 1.3], resolving 4 months after stopping).*

García-Cortés M, Borraz Y, Lucena MI, Peláez G, Salmerón J, Diago M, Martínez-Sierra MC, et al. Liver injury induced by “natural remedies”: an analysis of cases submitted to the Spanish Liver Toxicity Registry. *Rev Esp Enferm Dig* 2008; 100: 688-95. PubMed PMID: 19159172.

*(Among 521 cases of drug induced liver injury submitted to Spanish registry, 13 [2%] were due to herbals, including Camellia sinensis, Cassia angustifolia, kava, valerian, Rhamnus purshianus, fitosoja, biosoja, Aesculus hippocatanum, chitosan, Couterea latifloral).*

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*(Among 300 cases of drug induced liver disease in the US collected between 2004 and 2008, 9% of cases were attributed to herbals or dietary supplements [HDS] but none specifically to Sho Wu Pian).*

Navarro VJ. Herbal and dietary supplement hepatotoxicity. *Semin Liver Dis* 2009; 29: 373-82. PubMed PMID: 19826971.

*(Overview of the regulatory environment, clinical patterns, and future directions in research with HDS including traditional Chinese herbal medicines and usnic acid).*

Wang YP, Shi B, Chen YX, Su J, Jiang CF, Xie WF. Drug-induced liver disease: an 8 year study of patients from one gastroenterological department. *J Digest Dis* 2009; 10: 195-200. PubMed PMID: 19659787.

*(30 patients with drug induced liver disease seen at a single medical university in Shanghai between 2000-2008, of which 12 were attributed to Chinese herbs, but specific agents not discussed, 9 were jaundiced, 6 hepatocellular, 3 cholestatic and 2 mixed).*

Cho HC, Min HJ, Ha CY, Kim HJ, Kim TH, Jung WT, Lee OJ, Bae IG. Reactivation of pulmonary tuberculosis in a patient with Polygonum multiflorum Thunb-induced hepatitis. *Gut Liver* 2009; 3: 52-6. PubMed PMID: 20479902.

*(34 year old man developed jaundice 30 days after starting daily use of Polygonum multiflorum tea and extract [bilirubin 25.3 mg/dL, ALT 1452 U/L, Alk P 111 U/L] with neutropenia [and pulmonary tuberculosis], liver injury resolving slowly after stopping herbal product).*

Furukawa M, Kasajima S, Nakamura Y, Shouzushima M, Nagatani N, Takinishi A, Taguchi A, et al. Toxic hepatitis induced by show-wu-pian, a Chinese herbal preparation. *Intern Med* 2010; 49: 1537-40. PubMed PMID: 20686286.

*(53 year old Japanese woman developed fatigue after taking Shou Wu Pian for 8 months [bilirubin 1.2 mg/dL, ALT 417 U/L, Alk P 1425 U/L, ANA 1:320], resolving within 2 months of stopping).*

Bae SH, Kim DH, Bae YS, Lee KJ, Kim DW, Yoon JB, Hong JH, Kim SH. [Toxic hepatitis associated with *Polygoni multiflori*]. Korean J Hepatol 2010; 16: 182-6. PubMed PMID: 20606503.

*(54 year old Korean woman developed fatigue 1 month after starting Shou Wu [ALT 1136 U/L, Alk P 324 U/L], resolving rapidly but recurring upon reexposure).*

Jung KA, Min HJ, Yoo SS, Kim HJ, Choi SN, Ha CY, Kim HJ, et al. Drug-Induced Liver Injury: Twenty five cases of acute hepatitis following ingestion of *Polygonum multiflorum* Thunb. Gut Liver 2011 ; 5: 493-9. PubMed PMID: 22195249.

*(Case series of 25 patients with suspected hepatotoxicity from Shou Wu [Polygonum multiflorum] seen between 2007 and 2009 at a single Korean hospital; ages 24 to 65 years, presenting with jaundice after taking herbal as a tea or liquid extract for 2 to 180 days [bilirubin 1.6-32.9 mg/dL, ALT 271-1706 U/L, Alk P 81-465 U/L], injury pattern being hepatocellular [n=18] or mixed [n=7], liver biopsies showing acute hepatocellular injury, resolving in most, one died and one underwent liver transplantation, one had recurrence on reexposure).*

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*Jung [2011] and Panis [2005]).*