



## A CURIOUS CASE OF TOXICITY WITH HERB USED AS AN IMMUNITY BOOSTER

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### ABSTRACT

Use of herbal supplements is prevalent worldwide in a desire to gain health benefits without experiencing any adverse effects. The belief about use of herbs, ayurvedic and other alternative medicine is deep rooted in Indian population. The popularity of herbal products as immunity boosters has increased manifold worldwide in view of the ongoing COVID 19 pandemic. The herbal products may help in boosting the immune system but can also lead to unmasking of subclinical autoimmune hepatitis or producing inflammatory insult to hepatic tissue. Even well educated people including healthcare professionals are not an exception. This article reports an interesting case of chemical hepatitis in a faculty member of a medical college which got relieved with cessation of herb's consumption only.

**KEYWORDS:** Chemical hepatitis, herbal supplements, giloy, immunity booster.

### INTRODUCTION

India is a country with rich heritage. Alternative medicine has always been a preferred modality of treatment for Indian people. Herbal plants are offered reverence and prayers for their healing powers e.g. tulsi (holy basil), neem etc. Even healthy people are in a habit of using the herbal products to boost their immunity. Now-a-days commercial extracts of a variety of herbs are available due to their increased demand and popularity in the market. This interest in herbs and belief in the immunity boosting power of herbs witnessed a major spike during the corona virus pandemic triggering people to try different types of concoctions in an attempt to prevent infection. Remedies using herbs like aloe vera (Aloe barbadensis), tulsi (Ocimum sanctum), turmeric (Curcuma longa), giloy (Tinospora cordifolia), garlic (Allium sativum) etc. became a part of their daily routine. This obsession to avert COVID 19 grabbed even the highly educated people with scientific background including the medical community. In this report, we want to present an interesting case of chemical hepatitis in a senior medical professional.

### CASE REPORT

When whole nation was in the grip of lockdown in March 2020, different recipes of a multitude of immune boosters was in vogue. The senior faculty member, also, started consuming the herb, giloy, growing in their kitchen garden. The faculty member will be referred to as 'subject' in further description. The subject, with an

age of more than 60 years, is otherwise quite healthy, active and physically fit and has no history of any chronic disease. As the herbal supplement, the 3-4 inch stem of the plant (Figure 1) was crushed and stored in refrigerator after boiling in around 700-1000 mL of water. It was consumed daily in a quantity of 200 mL after diluting the stock in a proportion of 50:50 with water. In the latter half of September, the subject started experiencing loss of appetite but brushed off the symptom as a consequence of probable contaminated water supply. After a week i.e. on 29.09.20, the subject got investigated for biochemical profile as was unable to experience any relief. To everybody's dismay, the liver functions were found deranged (table 1). After confirming the report by repeating next day and suspecting it to be a case of viral hepatitis, serology was done for hepatitis virus panel which was found negative for hepatitis A, B,C and E. Clinical features were also not consistent with any infective picture. The spouse of the subject, also a medical specialist, then, advised the subject to stop taking giloy suspecting it to be the cause of liver injury. So, consumption of giloy was stopped from 1.10.20 and the subject kept getting investigated regularly. Within 2 weeks of stopping the herbal drink, the levels of liver enzymes started decreasing steeply and reached close to the normal range in around a month's time (table 1). After which, the sample was not analysed further as the subject was feeling perfectly fine and the appetite had become normal. Only treatment taken was the stoppage of giloy consumption leading to visible

improvement proving that the cause of liver injury was the herb only.

**Table 1: Date wise values of liver function tests in serum sample of the subject.**

	29.9.20	30.9.20	7.10.20	14.10.20	18.10.20	22.10.21	4.11.20
AST (IU)	2860	2628	2930	860	410	146	63
ALT (IU)	2980	3410	2340	1020	480	183	72
ALP (IU)	112	110	108	94	86	76	90
Bilirubin (mg%)							
Total	2.4	2.8	2.2	0.8	0.7	0.6	0.8
Direct	1.4	1.4	1.2	0.6	0.5	-	-
Indirect	1.0	1.4	1.0	0.2	0.2	-	-
Protein (g%)	6.3	6.4	6.8	6.6	6.5	7.1	7.2
Albumin (g%)	3.6	3.5	3.5	4.2	3.4	4.1	4.0
AG ratio	1.3	1.2	1.1	1.8	1.1	1.4	1.3

(Abbreviation: AST aspartate aminotransferase; ALT alanine aminotransferase; AG ratio albumin globulin ratio)

## DISCUSSION

Consumption of herbs and dietary supplements is prevalent worldwide and is not limited only to India. Population surveys indicate that around one third to one half of the adult population of United States (US) is in habit of taking dietary supplements for health benefits. In the US, dietary supplements are considered as foods rather than as drugs and are assumed to be safe, unless proven otherwise. These do not even require documentation of efficacy unlike the drugs though their manufacturers are prohibited from making claims for efficacy in treating diseases or conditions, such as hypertension or hyperlipidemia.<sup>[1]</sup> In India, commercial preparations are, now, available for almost all the herbal products but use of homemade concoctions is more popular.

Severe liver injury due to herbal dietary supplements is now well documented.<sup>[2]</sup> The exact mechanism of this effect is not yet completely elucidated. The cause of hepatotoxicity might be some constituent present in the herbal product (e.g. high doses of catechins particularly epigallocatechin gallate present in green tea extract) or the contamination of herbal supplement with some toxic element or illicit addition of drugs like corticosteroids, statins, anti-inflammatory substances. Increased oxidative stress is also pre-empted with these compounds.<sup>[3,4]</sup>

*T. cordifolia* (synonym: *Tinospora sinensis*), belonging to the family of Menispermaceae, is also known as Giloy/Guduchi/Amrita and is found in India, Myanmar, Sri Lanka and China. Giloy is useful as an ayurvedic medicine for the treatment of several ailments like jaundice, anemia, diabetes, heart diseases, leprosy, rheumatoid arthritis etc. and shows antiviral, anti pyretic and immunity booster properties. The pharmacological activities of the plant are due to its chemical constituents like diterpenoid lactones, glycosides, steroids, sesquiterpenoid, phenolics, aliphatic compounds, essential oils, a mixture of fatty acids and polysaccharides which are present in different parts of the plant body.<sup>[5]</sup> These properties of the plant made it the herb of choice during COVID 19 pandemic to the

extent of almost lunatic fringe. Ignoring the untoward side effects, people kept on consuming it in an attempt to avoid contracting the corona virus.



**Figure 1: Picture of giloy plant used.**

The hepatotoxicity observed with giloy may be due to its immunostimulant constituents leading to unmasking of latent chronic autoimmune liver disease which could have exacerbated an underlying pre-existing heightened immune response to self-antigens expressed by the liver. Increased oxidative stress caused by some of its components might also be the reason.<sup>[6]</sup>

As the evidence for infective hepatitis was found negative and the improvement was experienced after withdrawing the herbal product only in the subject, this report indicates that it was a case of chemical hepatitis or toxic hepatitis induced by *Tinospora cordifolia*. Liver biopsy could have provided a clear cut picture but that was not performed in this case.

Therefore, there is a need of medical profession to be familiar with the knowledge of hepatotoxicity associated with herbal products. Serological and histological evidence of autoimmunity needs to be investigated in patients presenting with an acute hepatitis with a negative viral serology. In such patients, efforts should

be made to elicit a history of consuming any herbal medicine. There is a need to urge caution and a warning about the potential of liver toxicity in these products which are otherwise considered safe, in general.

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