CLINICAL STUDIES ON KALMEGH (ANDROGRAPHIS PANICULATA NEES) IN INFECTIVE HEPATITIS

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ABSTRACT: Infective hepatitis is an acute inflamatory condition of liver. It is usually manifested in the form of Jaundice. In this clinical study Kalmegh (Andrographis paniculata Nees) was given in the decoction form to the patients of infective hepitis. The results were assessed on the basis of clinical and biochemical parameters. A marked symptomatic improvement in majority of the cases was observed. A statistically highly significant decrease was noted in various liver function tests viz., serum bilirubin, thymol turbidity, alkaline phosphatase, S.G.O.T.; S.G.P.T. and serum globulin fraction of protein. Moreover it increased significantly total serum protein level along with albumin fraction. On the total assessment 80% cases of this series were cured and 20% patients were relieved. Therefore, Kalmegh appears to be a useful remedy for the treatment of infective hepatitis.

Introduction

The tremendous scientific advancements in the field of applied hepatology, in the recent years, have rather added more problems to be answered than solved. Infective hepatitis is an important and acute liver disease among the hepatobiliary disorders.This acute condition is often followed by liver cirrhosis as well as hepatic coma with grave prognosis. Viral hepatitis is commonly defined as an acute inflammation of the liver caused by hepatitis A virus (HAV) or hepatitis B virus (HBV). Former is known as infective hepatitis (IH, type A) while the latter as serum hepatitis (SH, type B) (Sherlock[1] 1975). The above subdivision is based on epidemiological data as well as presence of hepatitis B antigen (HBAg) in the blood. (W. H. O.[2] 1979). The incidence of HBs Ag positivity in viral hepatitis is however invariable (Dutta[3] 1977; and Sama[4] 1976).

There is no rational therapy yet available for the cure of this disease. Supportive treatment is usually practiced. Āyurveda may help here. Caraka, Suśruta and Vāgbhaṭṭa, the ancient Āyurvedic physicians, have recognised the similar clinical picture as Kāmalā. They have recommended a fair number of herbal and compound preparations for the treatment of Kāmalā (Jaundice).

Recently, clinical and experimental studies are being conducted in various research Institutions. Pandey and Chaturvedi[5] (1966) have observed 95% excellent response to Kutaki (Picrorrhiza kurroa) in 20 patients with infective hepatitis. They showed the hydrocholeretic property of Kutaki with protective action on liver. A beneficial effect of Kutaki on liver parenchyma in carbon tetrachloride treated animals was also observed by them. Chaturvedi and Singh[6] reported a cure of 35% patients of hepatocellular jaundice with Kutaki. Rest 65% patients were improved. Mishra and Chaturvedi[7] prepared a compound preparation of Kaṭukī, Āmalakī (Emblica offiicinale), Bhṛṅgarāja (Eclipta alba) etc. in syrup base. In a study of 10 patients with

hepatitis, 60% patients were cured and 30% improved with this Kaṭukī compound. Chaturvedi and Singh (1975) showed a cure of 69% patients with this Kuṭukī compound, in a study of 42 patients with hepatocellular jaundice. They have also reported the beneficial effects of Dāruharidrā (Berberis aristata) and Kumārī – Āsava in patients with hepatocellular jaundice.

Therefore, it appears that there is enough potentiality to conduct intensive research work on Āyurvedic drugs for the treatment of liver diseases. Likewise, a clinical study was done to observe the beneficial effect of Kālamegha (Andrographis paniculata Nees) in patients with infective hepatitis.

Test Drug Kalmegh
(Andrographis Paniculata Nees)

Kalmegh (Andrographis paniculata Nees) is an ingredient of some compound preparations such as Pañcatikta Ghṛta and Kaṭukādya Ghṛta prescribed for Kāmalā (Jaundice) (C. Ci.[8] 16/47–49). A lot of work has been carried out on this drug in the current century. Chopra[9] and Nadkarni[10] have mentioned the effectivity of Kalmegh decoction or infusion in sluggish liver. Apart from this Chaudhuri (1978) reported the hepatoprotective of Kalmegh. He mentioned that Kalmegh increases the biliary flow in experimental rats. But the clinical study on the Kalmegh is still lacking. Therefore it was planned to evaluate the effect of Kālamegha (Andrographis paniculata Nees) in jaundice of infective hepatitis on the basis of scientific parameters.

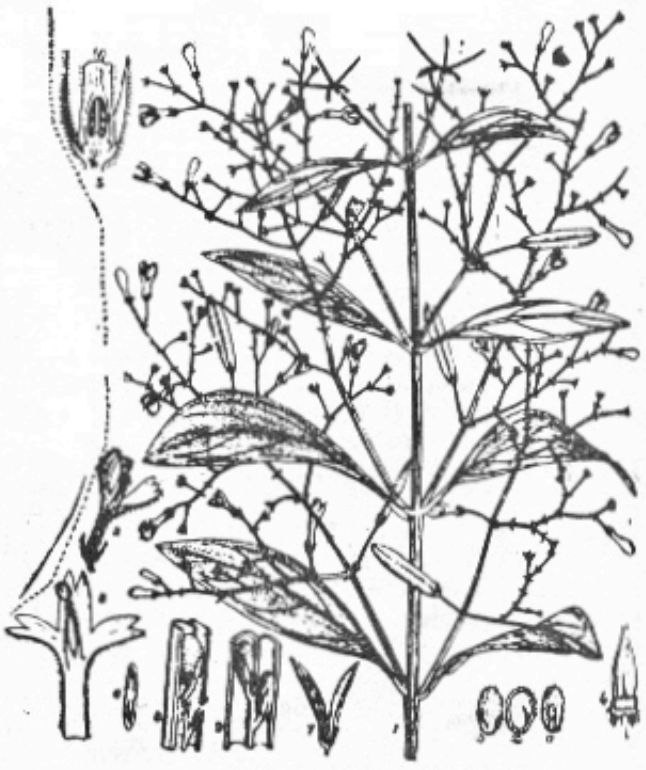
Kālmegh is a number of family Acanthaceae. It usually grows as a weed in the fields of rural India. It can be cultivated easily and is easy to procure. Further it is very cheap.

On phytochemical aspect, Dymock et al. (1893) were the first to report the presence of a non-basic, intensely bitter substance which fails to give any test of alkaloid in Andrographis paniculata, Gorter (1911) chalked out its formula, $C_{20}H_{30}O_5$, M.P. 217° and other properties as well in pure form, and he has ascribed it the name Andrographolide. Later on Bhaduri (1914) reported the presence of two non-basic principles from the leaves of A. paniculata, besides an essential oil and named them as Andrographolide ($C_{19}H_{28}O_5$; M.P. 206°) and Kalmeghin ($C_{19}H_{51}O_5$; M.P. 185°). The presence of Andrographolide also in the roots has been reported by Govindachari et al. (1969). (Fig. 1).

Materials and methods

Present study was conducted in S. S. Hospital, Banaras Hindu University, Varanasi. 20 cases of Infective Hepatitis, both males and females of varying age groups, belonging to eastern districts of Uttar Pradesh and western districts of Bihar, were treated with Kalmegh. The drug was given in decoction form in the doses of 60 ml/day, (equivalent to 40 gm of crude drug) in three divided doses. The average duration of treatment was 24 days.

Fig. No. 1.



ANDROGRAPHIS PANICULATA.

Clinical presentations of those patients were recorded in detail and detailed enquiry was also made about the onset of the jaundice and its previous attack if any.

Apart from routine examinations of blood, stool and urine, the main emphasis was given on the liver function tests. Both subjective and objective records were noted on every 4th day after administration of test drug. The biochemical assessment was also repeated on 12th and 24th day of the treatment.

The results were assessed on both the clinical improvement and biochemical improvement. Finally, the result was catagorised in the following terms.

Cured

Normalization of altered liver function tests along with complete symptomatic relief.

Relieved

Normalization of altered liver function tests along with considerable clinical improvement.

Apart from this, the patients were also asked about and uneasy feeling during the course of treatment.

Results & Discussion

(A) Clinical Improvement

In brief the patients noticed improvement in appetite on the fifth day of the treatment and gradually reached the normal state of appetite within 24 days. The yellow colour of urine gradually became normal within 3 weeks of treatment in all the patients (100%). Similarly the yellow colour of conjuntiva was gradually diminished and completely disappeared within 24 days of treatment in all the cases (100%). Fever, which was noted in 19 cases (95%) subsided on the 7th day (average) of treatment in all the cases (100%). Tender hepatic enlargement was observed in 18 i. e. (90%) cases and relieved completely within average (24 days) duration of trertment in 16 cases (88.8%). Similarly the improvement in other symptoms were also observed. The detailed data has been furnished in table-1.

The weight record of all the patients had been taken at 12th and 24th day of the

TABLE - I

Showing the effect of Kalmegh (Andrographis paniculata Nees) on symptomatology in patients of infective hepatitis (20 cases)

S. No.	Symptoms	NUMBER OF CASES		Improvement in percentage
		Present before treatment	Relieved after treatment	
1.	Yellow urine	20	20	100
2.	Yellow conjunctivae	20	20	100
3.	Fever	19	19	100
4.	Epigastric discomfort	16	16	100
5.	Hiccough	10	10	100
6.	Prostration	4	4	100
7.	Nausea	4	4	100
8.	Diarrhoea	1	1	100
9.	Loss of appetite	20	18	90
10.	Tender hepatic enlargement	18	16	88.8
11.	Pruritus	6	5	83.3
12.	Constipation	18	15	83.3
13.	General depression	12	10	83.3
14.	Weakness	20	16	80
15.	Peripheral oedema	5	4	80
16.	Dyspepsia	15	10	66.6
17.	Enlarged spleen	3	2	66.6

TABLE – II

Showing effect of Kalmegh (Andrographis paniculata Nees) on the body weight in patients of Infective Hepatitis (20 cases)

Mean of body weight in kg			S.E.	't'	'P'
Before treatment	After treatment	Difference			
54.35 ± 5.8244	55.4 ± 5.0513	1.05 ± 1.39	0.31	4.48	< 0.001

Remark – Highly significant increase.

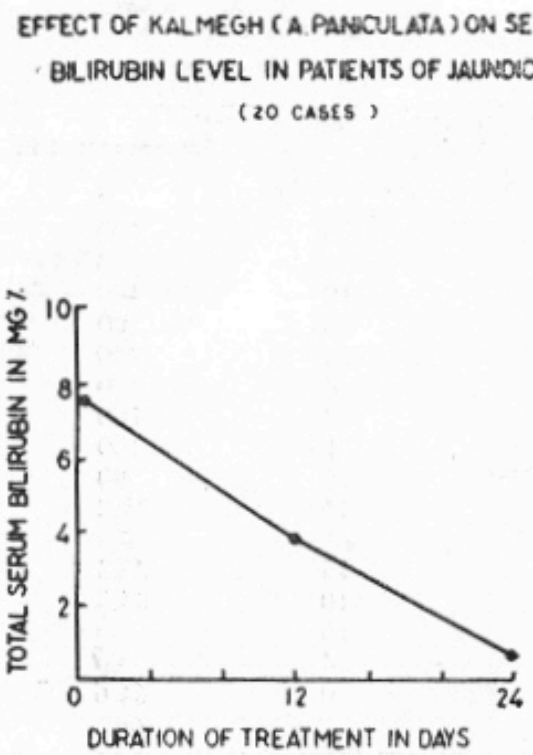
treatment. The 't' and 'p' values were calculated as 4.48 and < 0.001 respectively. It shows highly significant increase in the body weight on statistical analysis, at the end of the treatment. This increase may be due to the many other factors but probably the good appetite and fast recovery of sick liver cells might have played a major role. (table – 2).

(B) **Biochemical improvement** (improvement in altered liver function tests):

Serum Bilirubin:

The pre-treatment mean of serum bilirubin was 7.642 ± 2.426 mg/100 ml and after 24 days of treatment the mean value of the same reached to 0.787 ± 0.2217 mg/100 ml. The difference was 6.86 ± 2.30. The 't' value was 13.46 and 'p' value was less than 0.001; which showed highly significant decrease in serum bilirubin level, statistically (Fig. 2).

Fig. No. 2.



Thymol Turbidity:

Thymol turbidity was slightly raised in our series of study. The pre-treatment mean of thymol turbidity was 10.845 ± 5.398 Mc Lagans Units. After treatment mean value reached to 6.442 ± 1.800 Mc Lagans Units. Data were statistically analysed and as a result 't' value was found 3.90. The 'p' value was less than 0.001. The result showed highly significant decrease in the level of thymol turbidity. (Fig. 3).

Alkaline Phosphatase:

Alkaline Phosphatase was moderately raised in all the cases but it was highly elevated in two cases i.e. 105 and 90 K.A. units. The pre-treatment mean of alkaline phosphatase was 40.8 ± 21.229 K.A. units. After average duration of treatment the mean value reached to 15.45 ± 3.590 K.A. units. The 't' and 'p' values were 6.17 and less than 0.001 respectively; which showed highly significant decrease in alkaline phosphatase level on statistical analysis. (Fig. 4).

Serum Transaminases (S.G.O.T. & S.G.P.T.).

The serum transaminase value such as S.G.O.T. and S.G.P.T. have been much emphasized as an important diagnostic enzymatic test in the sufferers of liver diseases with jaundice. Both (S.G.O.T. & S.G.P.T.) the value were found raised in our series of study. The pretreatment mean values of S.G.O.T. and S.G.P.T. were 117.05 ± 66.131

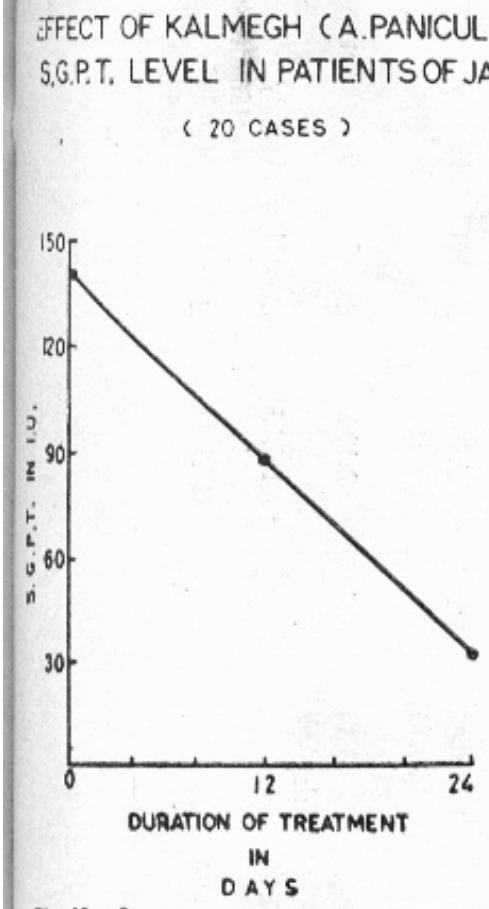


Fig. No. 3.

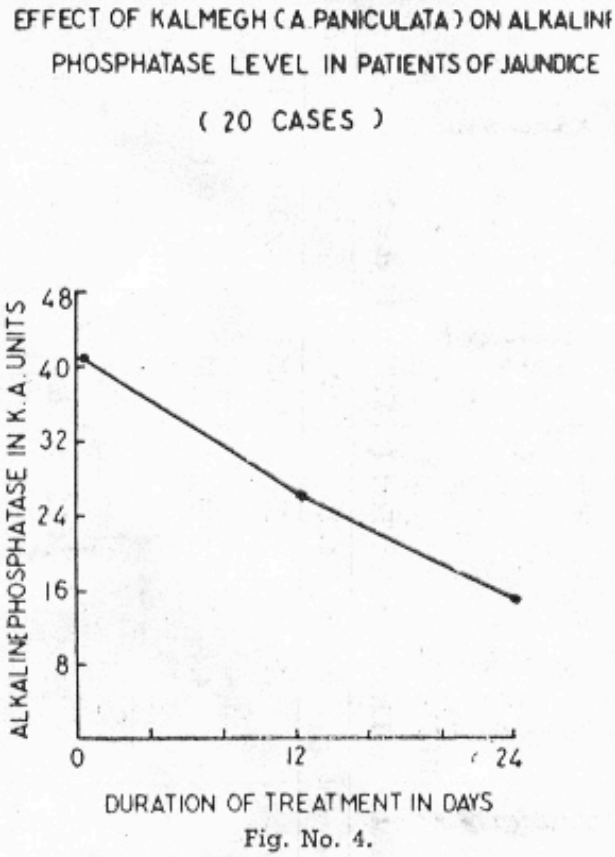


Fig. No. 4.

I.U. and 140.15 ± 83.838 I.U., respectively. After 24 days treatment the mean values of S.G.O.T. & S.G.P.T. were reached to 30.55 ± 6.893 I.U. and 31.95 ± 8.120 I.U. respectively. The 't' and 'p' values of S.G.O.T. were found 6.08 and less than 0.001 respectively, whereas the 't' and 'p' values of S.G.P.T. were 5.99 and less than 0.001, respectively. It proves the regression response of test drug on abnormally raised S G.O.T. and S.G.P.T. levels (Figs. 5 & 6).

Serum protein and A : G ratio :

Kalmegh showed a statistically significant increase in serum protein level (the 't' and 'p' values were 2.194 and less than 0.05 respectively). The albumin and globulin ratio was also affected after treatment. There was highly significant increase in albumin fraction (with 't' and 'p' values of 6.15 and less than 0.001, respectively) whereas highly significant decrease in the globulin fraction (with 't' and 'p' values of 3.20 and less than 0.01, respectively). The effect of the Kalmegh on various liver function tests has been furnished in table–III.

Total response of the test drug :

The criteria for assessing the total response has been already discussed in materials and methods. As a result; out of 20 patients, (80%) were reported in cured group of response. Only 4 cases (20 %) were reported in relieved group of response. (Table – IV).

Conclusion

On the basis of above observation, it may be inferred that the Kalamegha (Andrographis paniculata Nees) is the most cheaper and beneficial drug for the treatment of Infective Hepatitis. In this way it is hoped that Kalamegha (Andrographis paniculata Nees) may prove a valuable contribution for the treatment of liver disorders from Āyurveda to the medical world.

TABLE - III

Effect of Kalamegha (A. Paniculata) on Liver Function Test (L. F. T.) (20 cases)

S.No.	Name of test	Before treatment	After treatment	Difference	S. E.	't'	'p'	Remarks
1.	Serum bilirubin	7.642 mg% ± 2.426	0.787 mg% ±0.2217	6.86 ± 2.30	0.51	13.46	∠0.001	Highly significant
2.	Thymol turbidity	10.845 Mc Lagans unit ± 5.398	6.442 Mc Lagans unit ±1.800	4.40 ± 5.05	1.13	3.90	∠0.001	Highly significant
3.	Alkaline phosphatase	40.8 K.A.Units ±21.229	15.45 K.A.Units ±3.590	25.35 ±18.38	4.11	6.17	∠0.001	Highly significant
4.	S. G. O. T.	117.05 IU/ml ±66.131	30.55 IU/ml ±6.893	86.50 ±63.58	14.22	6.08	∠0.001	Highly significant
5.	S. G. P. T.	140.15 IU/ml ±83.838	31.95 IU/ml ±8.120	108.20 ±80.70	18.05	5.99	∠0.001	Highly significant
6.	Serum Protein	5.82gm% ± 0.53	6.16 mg% ±0.36	0.34 ± 0.6948	0.155	2.194	∠0.05	significant
7.	A:GRatio	2.18 : 2.79	2.90 : 2.15			A1.6.15	∠0.001	Highly significant
		± 0.50 ± 0.43	±0.35±0.79			G1.3.20	∠0.01	Highly significant

EFFECT OF KALMEGH (A.PANICULATA) ON S.G.O.T LEVEL IN PATIENTS OF JAUNDICE (20 CASES)

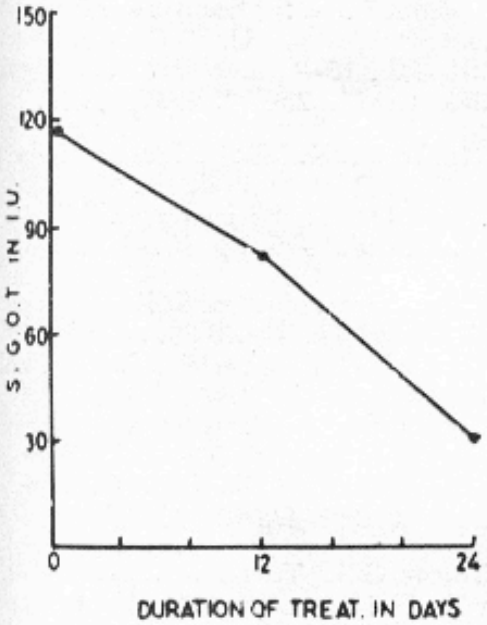


Fig. No. 5.

EFFECT OF KALMEGH (A.PANICULATA) ON THYMOL TURBIDITY LEVEL IN PATIENTS OF JAUNDICE (20 CASES)

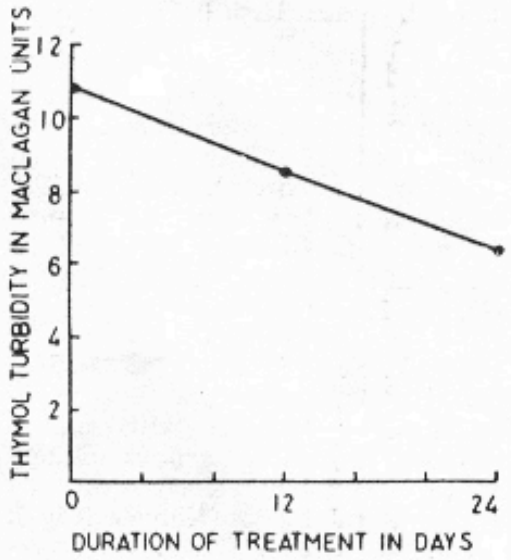


Fig No. 6.

TABLE - IV

Showing Total Response of Kalmegh (Andrographis paniculata Nees) in patients of Infective Hepatitis (20 cases).

S. No.	Group of Response	Number of cases	Percentage
1.	Cured	16	80
2.	Relieved	4	20
	Total	20	100

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