CHAPTER - I
INTRODUCTION
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Liver is the vital organ of the body with multifarious activities. The organ is continuously exposed to a great variety of endogenous and exogenous substances including the toxic substances of metabolic and therapeutic nature. The organ plays a great role to detoxicate a great number of toxic products and thereby protect the body from their harmful effects. Until now no curative and protective agent has been found to protect the organ from the continuous exposure to endogenous and exogenous substances. Corticosteroids and immunosuppressive drugs though used widely their actions are only palliative. Furthermore, long time use of these substances generally produces many side effects.

About 100 different Medicinal Plants in different combination are regularly used in different liver ailments including hepatitis by the practitioners of the traditional system of medicine. The more frequent and commonly used ones are *Leucas cephalotes* Spreng. (Dronapuspika), *Aloe barpadensis* Mill. (Kumari), *Tinospora Cordifolia* Milers. (Amrita), *Tecomella undulate* Seem. (Rohitaka) and *Terminalia chebula* Retz. (Haritaki) - the last one being almost in every preparation. *Terminalia chebula* is being used in different ailments starting from treatment of asthma, cough, obstinate urinary disorders, diabetes, piles, obstinate skin diseases including leprosy, oedema and ascitis, other obstinate abdominal diseases, parasitic infection, hoarseness of voice, spine syndrome, constipation, malarial fever, phantom tumour, typhoiditis, ulcer, vomiting, hiccups, itching, heart diseases, liver disorders, colic pain to splenic disorders (Bhavaprakash purvakhand). The name of ‘Haritaki’
has been derived from the fact that it grows in the abode of Hara (Lord Siva) i.e. in the Himalayan green region.

"Harashya Bhavone Jata Harita Cha Swababhata, Harate Sarba-Ragascha Teno Prokta Haritaki".

(Dravyaguna Vigyan, 2nd Pt. (1987)

However, the tree is abundant all over India at an altitude of 330 to 1000 meter. Chemically, the Haritaki fruits contain about 30% of astringent substances consist of chebulic acid, diabasic acid, ellagic acid and free tannic acid. The chemical study of the Terminalia chebula is not complete and the action principles responsible for the therapeutic actions are yet to be conclusively established.

The chemical formula of the active principle of Terminalia chebula has been worked out as C_{28}H_{46}O_{4} with presence of ester and acetate group, Inamdar and Rao (1962). Tripathi et al. (1983) observed a significant decrease in serum bilirubin, Thymol turbidity, alkaline phosphatase, transaminase group of enzymes and serum globulin after feeding to the animals with aqueous extract of Andographis paniculata and suggested that the plant is useful in the treatment of infective hepatitis.

Bhowmik et al. (1989) and Reddy et al. (1994) conducted chemical investigation of the fruits of Terminalia chebula but in the present investigation however has not been aimed for the study of phytochemistry of the plant, but to investigate its effect on the liver and its enzyme system. The physiological effects of the Terminalia chebula on intestine and kidney have been investigated earlier. Sarma and Goswami (1993) reported the effect on a few aspects of liver functions after
administration of *Terminalia chebula* and observed upto 28 days of oral administration. It has been noted that some alteration in carbohydrate, protein metabolism with change in the alkaline phosphate and transaminase group of enzyme is being take place. It is of the interest to note that used in different ways like chewing, pasting, steam boiling and in the different seasons *Terminalia chebula* produces various types of effects, Dash Bhagawan *et al.* (1980).

*Terminalia chebula* is an important medicinal plants and has been mentioned in all the treatise. Most of the research work has been conducted on its purgative activity, hypoglycemic effect, nutritive effect and some common gastro-intestinal disorders. Some short of clinical study has been conducted on *Terminalia chebula* in a combination wise *Terminalia belliridica* and *Embelica officinalis*, which is altogether known as Triphala in Indian System of Medicine.

On the other hand it has been mentioned in Bhavaprakash Nighantu, Dwivedi B.N. (1977) regarding the therapeutic indication of *Terminalia chebula* on various hepatic disorders like jaundice, abdominal colic, flatulence, splenic disorder etc.

"Kamalang Shulam Anaha Plihanang Cha
Jakritagadam."

*Bhavaprakash Nighantu, (1977)*

Further in Charaka Samhita (Charaka, 1984) the use of *Terminalia chebula* in the management of jaundice (Kamala), flatulence, splenic disorder, diabetes etc. has been clearly indicated.
Though the plant is abundantly grows in north-east India and a common species of northern forest range, the aqueous extract of *Terminalia chebula* has not been tried properly in experimental animals. Keeping in view to the above reference the proposed study was undertaken for scientific evaluation of *Terminalia chebula* with following aim and objectives-

The aim of the present work was to study the effect of the aqueous extract of *Terminalia chebula* (Haritaki) on liver protection and enzymatic change in healthy rat.

The objectives were as follows-

a) The effect of *Terminalia chebula* on liver system particularly on liver enzymes and other biochemical activities.

b) To evaluate the hepatoprotective action on rat liver.

c) To evaluate the induced effect of *Terminalia chebula* extract after hepatic injury through CCl₄ model.

d) To conduct histopathological study of liver tissue to correlate the functional changes of liver with structural changes.