SUMMARY AND CONCLUSION
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Every year 18,000 people are reported to die due to liver cirrhosis caused by hepatitis. Traditional systems of medicine, especially Ayurveda advocates number of preparations for treating liver & GIT disorders. Modern medicine provides only symptomatic relief with added side effects in the treatment of liver disease. Herbal drugs, used in Indian System of Medicine are however claimed to be effective and safe in such ailments. Polyherbal preparations are considered safe & effective products consisting of multiple extracts/ active principles from medicinal plants with additive or synergistic benefit. By considering the above aspects, the present proposal of study is designed for the development of newer herbal hepatoprotective formulation.

In the present study, coarsely powdered shade dried plant materials are selected for the development of polyherbal formulation. The material were subjected to evaluation of quality control parameters for raw material and then subjected to extraction with different solvent system and fractionation by separating funnel. The concentrated extracts were subjected to preliminary physical and phytochemical investigation in order to assess the quality of plant material and understand the nature of active constituents present. There were 5 fractions from 3 plants extracts which were used for further studies.

Qualitative phytochemical analysis of the alcoholic extracts of *Butea monosperma*, *Bauhinia variegata*, *Ocimum gratissimum* and its fractions indicates the presence of various phytoconstituents like tannins, flavonoids, steroids, terpenoids, alkaloids, and phenolic compounds. The total phenolic and flavonoid contents were determined using folin ciocalteu and aluminum chloride colorimetric methods respectively. The phenolic and flavonoid contents were found to be the highest in ethyl acetate fraction of *Ocimum gratissimum* and the lowest in n-butanol fraction of *Bauhinia variegata*.

Phytochemical analysis of these plants was carried out by TLC/HPTLC. The TLC analysis showed the presence of quercetin in all plants and presence of ursolic acid in *Ocimum gratissimum*.

On the basis of the HPTLC data, quercetin (0.113 µg/10 mg) and ursolic acid (344.53 ng/10 mg) have been identified and quantified in the herbal hepatoprotective formulation.

Hepatoprotective activity was performed by paracetamol induced hepatotoxicity in rat model. In this, total 8 groups with 6 animals in each were used and silymarin
was used as standard. Biochemical analysis and histopathological studies were performed on liver tissue. Acetone fraction of *Butea monosperma*, ethyl acetate and n-butanol fractions of *Bauhinia variegata*, and dichloromethane and ethyl acetate fractions of *Ocimum gratissimum* show significantly brought down the elevated levels of SGPT, SGOT, ALP, and bilirubin. Hepatoprotective activity was highest in ethyl acetate fraction of *Ocimum gratissimum* and the lowest in n-butanol fraction of *Bauhinia variegata*.

In the present work an attempt has been made to formulate the polyherbal tablets using the significant extracts and tablets were evaluated for various quality parameters.

Tablets using significant extracts were formulated by wet granulation method using microcrystalline cellulose as a diluent, crospovidone as disintegrating agent, starch as diluents/disintegrating agent, aerosil and talc as glidant and magnesium stearate as lubricant.

Formulations were evaluated for pre-compression parameters like angle of repose, bulk density, tapped density, compressibility index and hausner ratio and post-compression parameters like color and shape of tablets, thickness and diameter, weight variation, friability, hardness, disintegration time and stability studies.

Appearance, hardness and disintegration time of the tablets were the parameter checked during stability studies over 30 days at different conditions. There was no significant change observed in the appearance and color. The formulation had pleasant appearance and acceptable odor.

The hardness of the tablet was evaluated at an interval of 10 days during stability studies. Data revealed that there was no significant change in the hardness after 30 days.

The disintegration time of the tablet formulation was evaluated at an interval of 10 days. Data revealed that there is no significant change in the disintegration time after 30 days.

No significant change in appearance, odour, hardness and disintegration time of tablets, indicating that the formulation is stable at accelerated conditions.

The PTF-1 and PTF-2 polyherbal tablet formulations were screened for the hepatoprotective activity. The results obtained from the pharmacological screening indicated that PTF-2 polyherbal formulation possessed significant hepatoprotective activity compared to PTF-1 and all individual extracts. The combination of acetone
fraction of *Butea monosperma*, ethyl acetate and n-butanol fractions of *Bauhinia variegata*, and dichloromethane and ethyl acetate fractions of *Ocimum gratissimum* in the tablet formulation PTF-2 showed better hepatoprotective activity.

After thorough analysis of the results of the study, following conclusions were drawn;

- Herbal therapy provides a rational means for the treatment of many internal diseases. The plant products are harmless or have least side effects than synthetic drugs.
- Herbal formulations have received widespread acceptability as therapeutic agents in India and abroad. Some of the indigenous plants available in India were found to show significant hepatoprotective activity.
- The selected plants and their extracts after detailed investigation have shown significant hepatoprotective activity in various fractions.
- Extracts showing significant activity due to presence of certain active constituents can be effectively formulated into one of the most convenient and promising dosage form i.e. tablet.
- Result of physical parameters of tablets indicated physical stability, whereas pharmacological screening hints the effectiveness of formulations as compared to individual extracts.
- Further studies will elaborate techniques need to develop other dosage form using these fractions.