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Investigating the mechanism behind hepatoprotective activity of Livafit

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ABSTRACT

Indian traditional systems of medicine like Ayurveda, Siddha etc. were ancient and were originated before 3000 years. They had been effective in treating diseases using herbs and natural products. They incorporated potent medicines of natural origin and created formulations that were significantly effective compared to synthetic drugs. They had been some game changers and drugs of choice in specific diseases like hepatitis, jaundice and few other renal and heart-related diseases. But the major issue with the herbal formulations here being the lack of activity of very drastic changes in the activity which doesn't correlate with the in-vitro results when used invivo. It might be due to various reasons few may be corresponding to the Pharmacodynamics of the human body. Doctor's Herbal solutions was a Govt approved company which makes herbal formulations and had developed good quality of herbal products to treat a broad spectrum of diseases. All the outcomes of the company are AYUSH approved, and one of those products is LIVAFIT. They claim that the product is used to treat conditions like hepatic cirrhosis, jaundice, alcohol-induced hepatic damage etc. The doctor's LIVAFIT was investigated for the antioxidant activity in vivo, and the results showed that the antioxidant activity was responsible for the hepatoprotective activity. The formulation also replaced and normalized the enzyme levels.

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INTRODUCTION

Indian traditional systems of medicine like Ayurveda, Siddha etc. were ancient and were originated before 3000 years [1, 2]. They had been effective in treating diseases using herbs and natural products. They incorporated potent medicines of natural origin and created formulations that were significantly effective compared to synthetic drugs [3]. They had been some game changers and drugs of choice in specific diseases like hepatitis, jaundice and few other renal and heart-related diseases [4]. Observing this demand, many multinational pharmaceutical companies have landed in this arena and grounded themselves in formulating best herbal formulations ever known [5, 6]. The manufacturers acquired the markets through the potency and safety of the herbal formulations and therefore are a booming trend in the pharmaceutical industry [7]. Due to the more advanced medical treatment and the extent of side effects of the available synthetic formulations, the world looks for these alternative sources of medicines [8].

But the major issue with the herbal formulations here being the lack of activity of very drastic changes in the activity which doesn't correlate with the in-vitro results when used invivo. It might be due to various reasons few may be corresponding to the Pharmacodynamics of the human body [9]. So, the theoretical or invitro values are not sufficient to determine the activity of the formulations. That is why there is a need for the standardization of these

Table 1: Formulation of Livafit

S.No.	Ingredients	Quantity
1	Phyllanthus niruri	50mg
2	Picrorhiza kurroa	50mg
3	Phyllanthus Emblica	50mg
4	Andrographis paniculata	50mg
5	Terminalia chebula	50mg
6	Withania somnifera	50mg
7	Solanum nigrum	50mg
8	Boerrhavia diffusa	50mg
9	Cyperus rotandus	50mg
10	Eclipta alba	50mg

Table 2: *Invivo* antioxidant activity of LIVAFIT

Parameter	Normal	Negative Control	P. neruri extract 100mg/kg	Formulation 100mg/kg
Protein (mg/g)	0.8526 ±0.0813	0.4824 ±0.0982	0.8417 ±0.1286*	0.8629 ±0.0732*
Superoxide Dismutase	6.291 ±0.627	1.736 ±0.829	3.512 ±0.678*	5.491 ±0.751*
Lipid Peroxidase	91.52 ±1.91	67.50 ±1.89	84.40 ±2.62	89.30 ±1.91*
Catalase	50.45 ±1.98	23.52 ±0.81	31.44 ±1.32*	36.50 ±0.83*
Glutathione Peroxidase	206.94 ±4.71	72.63 ±2.25	168.4 ±12.47*	199.52 ±7.69*
GSH	129.44 ±9.01	80.64 ±3.78	98.47 ±1.91	117.62 ±2.75*

formulations in terms of invivo activity [10].

Out of all activities of the herbal formulations, antioxidant activity of herbs are the underlying mechanisms in any activity [11]. Herbs are found to fight the oxidative free radicals that cause denaturation of proteins and interfere with the peroxidation of membranes and expression of DNA and RNA. It will results in the altered bodily functions of restoration and building up, leading to the physiological stress [12]. These radicals should be combatted for preventing the harmful effects of free radicals and protect the body. Their herbal formulations were found effective in treating diseases, and the underlying mechanism was found to be the antioxidant activity [13].

Doctor's Herbal solutions was a Govt approved company which makes herbal formulations and had developed good quality of herbal products to treat a broad spectrum of diseases. All the outcomes of the company are AYUSH approved, and one of those products is LIVAFIT. They claim that the product is used to treat conditions like hepatic cirrhosis, jaundice, alcohol-induced hepatic damage etc. [14]. It was already investigated, and its hepatoprotective activity invivo had been established. In this research, a hepatoprotective formulation known as Doctor's LIVAFIT was investigated for the invivo antioxidant activity to develop the hepatoprotective mechanism of the formulation [15].

PREPARATION OF FORMULATION

Formulation of Livafit (LF)

The formulation was prepared using the following herbs and the quantities in our laboratory. The extracts were procured from Tulsi Amrit, Ahmedabad. All ingredients were adequately mixed with the help blender for 2hrs, and the mixture is filled into gelatin capsules of 0 size (Table 1).

Antioxidant assay

The albino rats were used to investigate the antioxidant activity of the formulation invivo. The animals were procured from a wholesale supplier from Bengaluru. They weighed between 160-180g. They were allowed to rest in conditioned air which is circulated freely and allowed access to free food and water.

The antioxidant activity was evaluated in DMH method. The rats were divided into 4groups with 5rats in each group which are treated as the control group which received normal saline, negative

control which received DMH and saline, test group 1 which received Phyllantyus nature at 100mg/kg and test group 2 received formulations at a dose of 100mg/kg body weight. The DMH is administered weekly once, and the extracts and the formulation were administered daily once per oral. The animals were sacrificed after the experimental protocol, and the livers were isolated. The livers were isolated and blended into a mash. It is centrifuged at 4000rpm, and the supernatant liquid is collected and stored for further use.

Invivo estimation

Proteins, Superoxide Dismutases, Catalases, Glutathione Peroxidases and Glutathiones Reductases were measured using methods proposed by standard references.

RESULTS

The estimation of the invivo activity of the formulations was performed using DMH method, and the results were tabulated in table 1. DMH induced the hepatotoxicity by generating free radicals and causing tissue damage which was evident from the lowering of the antioxidant enzyme levels in the tissue. The negative control group showed the level of tissue damage and produced a significant lowering of the standards of the antioxidant enzymes. The extract of the P. neruri showed a reasonable alternation or replacement of the enzymes to a certain extent but not significantly better than the formulation. The formulation contained the mixture of extracts which processed significant antioxidant activity, therefore, enabling a significant hepatoprotective activity (Table 2).

CONCLUSION

The doctor's LIVAFIT was investigated for the antioxidant activity in vivo, and the results showed that the antioxidant activity was responsible for the hepatoprotective activity. The formulation also replaced and normalized the enzyme levels. There is also a need for standardization of formulation in terms of chemical constituents and activity to establish the exact mechanism of action considering the variabilities in the body.

CONFLICT OF INTEREST

Authors declared no conflict of interest.

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