

SYNOPSIS

Title: Ameliorative Effects of a Multi Herbal Formulation upon Some Chosen Disease Models in Mice

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Treatment of different disease with a single molecule is becoming a new challenge towards the Scientists as well as researchers throughout the globe due to different reasons. Which are massive environmental changes, for global warming, changing behaviour of the agents of the disease, manifestation of the disease itself. Rapid industrialization, stressful life, uncontrolled modern life style and day to day environmental imbalance good health and long life are being threatened. Now a day's people both developing and developed countries are suffering from some non-communicable diseases like obesity, gastric ulcer, diabetes and chronic kidney disease. In this context fight against these diseases through new medicines (i.e single molecule, mixture of different drug, formulations etc) is a great challenge.

Use of formulations using medicinal plants have burgeoned in recent times due to increased efficiency of drugs derived from plants, as a result in natural products and interest in concerns about the side effects of conventional medicine. Herbal mixture combinations have shown that they possess better efficacy and reduced side-effects in comparison with single drug as in many cases, particularly in combination with single drug or mixture of allopathic drug.

Use of formulations using medicinal plants have burgeoned in recent times due to increased efficiency of drugs derived from plants, as a result also in natural products. Concerns about the side effects of conventional medicine have also become a game changer in this transitional

field. Herbal mixtures and combinations have shown that they possess better efficacy and reduced side-effects in comparison with single drug as in many cases, particularly in combination with single drug or mixture of allopathic drug.

Multi herbal complex contain a combination of botanicals; each of these contains a number of chemical compounds that may give the anticipated activity in combination. These complexes may exert synergistic, potentiative, agonistic or antagonistic actions by virtue of its associated diverse active principles. Moreover, combination of herbals may act on multiple targets at the same time to provide a thorough relief. Due to synergism, polyherbalism offers some great benefits which lacks in single herbal formulation. It is evident that better therapeutic effect can be reached with a single multi-constituent formulation. Multi herbal formulation also having multiple types of molecules against a disease complication, so different molecules may cure a disease by different mechanism acting on different target molecules involves in the etiology of a disease and provide a better therapy against a disease condition.

Nanomedicine, raises high expectations for millions of patients for better, more efficient and affordable healthcare and has the potential of delivering promising solutions to many illnesses. From diagnosis to disease monitoring, going through surgery and chemotherapy or regenerative medicine, nanotechnologies virtually impacts all fields of current medicine. Several areas of medical care are already benefiting from the advantages that nanotechnology can offer. The first nanotechnology-based targeted drug delivery systems are already in the market, others are in clinical trials or, by far the largest part, are under development.

The thesis work proposes synthesis of novel herbal formulation and evaluation of its toxicological, anti-ulcer, anti-obese, chronic kidney disease and non-alcoholic steatohepatic therapeutic action in murine model. The thesis will also encompass green synthesized herbal conjugate with *Andrographis paniculata* and metal oxide nanoparticle like Ag, depicting their ameliorative potencies upon disease models like hepatic fibrosis, diabetic nephropathy and hepatic injuries. Their toxicological signatures are observed prior to their therapeutic applications. The nanoparticles are synthesized using cost effective and facile green routes for better bioavailability. Both in-vitro and in-vivo studies of affected organs along with their

histopathological signatures are taken into account and will aim to look into the molecular mechanism for better efficacy.

Our *in-vivo* studies on experimental animal model have addressed the following questions on the medicinal/toxicological effects of the herbal formulations/ nanoconjugates:

- 1) General toxicological studies and histopathological changes in mouse model
- 2) Effects of hepatobiliary, renal and alimentary system
- 3) Several parameters including some important biochemical parameters responsible for free radical scavenging and antioxidant activity were monitored
- 4) Significant ameliorative changes were observed with some findings.

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