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A Literary Review on Role of Ethno-medicine In Drug Discovery and Development

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ABSTRACT

World Health Organization defines Traditional Medicine as, the sum total knowledge, skills and practice based on the theories, beliefs and experiences indigenous to different cultures whether explicable or not used in the maintenance of health as well as in the prevention, diagnosis, improvement or treatment of physical and mental illness. Traditional medicine is a part of health care systems around the globe. Drug discovery and development strategies based on traditional / ethno-medicine is emerging as an alternative option. Traditional knowledge can provide valuable guidance in selecting and obtaining plant material of potential therapeutic interest and knowledge experimental database of traditional herbal medicine can provide a new functional leads to reduce time, Money, Toxicity - the three main hurdles of conventional drug development.

Key words: *Ethno-medicine, Traditional Medicine, Drug Discovery.*

INTRODUCTION

Ethno-medicine is a study of traditional medicine based on active compounds in plants and animals practiced by various ethnic groups especially those with little access to western medicine.

Eighty percent of the world's population relies on traditional medicine to maintain its health. Annually worldwide sales of plants derived pharmaceuticals currently total over 20 billion dollar and a great many of these drugs were first discovered by traditional healers in folk medicine.

The world health organization has embarked upon an

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ambitious programme to evaluate herbal medicines. This project ultimately hopes to circumvent the problems of developing and distributing appropriate pharmaceuticals by encouraging the cultivation and use of locally adopted medicinal plants with proven empirical value.

For the use of herbal drugs in traditional medicine the drug has to be standardized and evaluated for specific activity by pre-clinical and clinical studies. This drug discovery from plants involves a multidisciplinary approach combining botanical, ethno-botanical, phytochemical and biological techniques. The drug discovery from traditional medicine helps in achieving many objectives like,

- Documentation of facts about plant use and management.
- To rescue knowledge in imminent danger of being lost.
- Utility of plants in current therapy.
- To find new molecular models in plants.
- The wide use of plants in folk medicine.
- To obtain intermediate chemicals.

The sequence of drug discovery program by ethno-medicine will be,

1. Folk knowledge accumulates concerning possible pharmacological activity of plant.
2. Plant is therapeutically used by healer.
3. The healer communicates with the research person or vice-versa.
4. Researcher collects and identifies the plant.
5. Plant extracts are tested using a Bio assay
6. Bio-assay guided fractionation leads to isolation of active substances.
7. Structure of the pure substance is determined.

Drug development steps

1. Identification
2. Chemical analysis
3. Bio- assays

1) Identification

Establishment of the identity of the medicine.

The use of herbal medicine or natural products starts with the identification, authentication of medicinal plants by botanical techniques like,

- Morphological features
- Macroscopic features
- Microscopic features
- Physical parameters
 - Ash values
 - Extractive values
 - Volatile matters etc.

2) Chemical analysis

Chemical analysis involves series of process of identification, determination, quantification, separation of components in plant extraction. In this structural determination of chemical compounds are done, and these active principles are subjected to bio-assay.

3) Bio- Assay

The bio-assays are performed by In-Vitro and In -Vivo methods. The aim of this step is to confirm,

- The pharmacological activity
- Toxicological studies
- Additional or unexplored pharmacological activities.

Pharmacological Activity

The claimed activity is tested by In-Vitro and In-Vivo methods. As the drug is already in practice for activity, this step is followed to check or trace the mode of action of drug and effect of drug on all vital organs, other than the target, here both positive and negative effects are noted.

Toxicological studies

Safety claims on herbal medicines cannot always be based on traditional empiricism. Not all herbal medicines have firm roots in traditional practices. And when traditional source plants are extracted in non-traditional way, the question arises whether this non-traditional extraction is just as safe as the traditional one. In other cases, herbal ingredient may have no medicinal tradition at all, and its route of administration or dose level may be quite different from that used in traditional setting. WHO notes that, inappropriate use of traditional medicines or practices can have negative or dangerous effects and that further research is needed to ascertain the efficacy and safety of medicinal plants. For all these reasons, the toxicity, lethal dose, therapeutic effective dose are to be fixed or checked by animal experiments.

Additional activities

Other than claimed pharmacological activity, any other activities are performed can also be screened based on its chemical analysis. If any active principle is identified then that may be tested for further related bio assay and multiple activities depend on dose and formulation may be known.

CONCLUSION

Ethno-medicine is a study of traditional medicine based on active compounds in plants and animals. According to WHO, 80% of the world's population relies on traditional medicine to maintain its health. Plant medicines having firm root in our tradition will ease the process of drug discovery and development by saving the time and money. And while screening some medicinal plants, therapeutic effective dose, toxic dose and any other ADRs present can be fixed. The additional activities can be established or explored by screen the drugs. Thus a folk medicinal plant or medicine is standardized by, Identification, analysis, subjecting it to biological activities and at the end, safe, standardized drug can be given to the society.

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