

Allopolyherbal Formulations and their Strategies

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Abstract

Allopolyherbal formulations refer to combination of allopathic drug and polyherbal formulation. The herbal plant and their derivatives are one of the most ancient forms of medical treatment used to cure the diseases and their symptoms. Although, from ancient period herbal medicines have been used effectively in treating various disorders or diseases all over world and generally considered to be less toxic and free from side effects as compared to synthetic allopathic drugs. The main reason of incorporating allopathy with herbal is to modify or explore these medicine systems for the profit of patient and to introduce it in the current medicine to improve the pre-existing therapeutics medicines for new challenges of the contemporary world. In Allopolyherbal formulations the effect of drug will be same but the side effect is overcome by the reduction of dose of allopathic drug and the combination of allopathic and herbal drug as compared to synthetic ones. Many herbal medicinal plants provide relief of symptoms comparable to that one produce by allopathic drugs. The simultaneous use of PHFs and allopathic drugs is expanding as most of the patients do not notify their medical practitioners on the adjuvant treatments.

Keywords: Allopolyherbal formulation; Polyherbal drug; Allopathic drug; Therapeutics; Herbal plant

Introduction

Allopolyherbal formulation refers to combination of allopathic drug and polyherbal formulation. The herbal plant and their derivatives or metabolites are one of the oldest forms of medical treatment used to cure the numerous diseases and their symptoms. Although, from ancient period herbal plants are used effectively for treating diseases throughout the world and are considered to have little or no side effect as compared to synthetic ones. The basic idea of incorporating allopathy with herbal is to modify everything and anything from these medicine systems for the beneficial of patient and to include in the mainstream medicine to extend the already existing therapeutics which is a new challenges for the modern world [1].

In Allopolyherbal formulations the effect of drug will be same but the side effect is overcome by the reduction of dose of allopathic drug and the combination of allopathic and herbal drug as compared to synthetic ones. For example- the combination of herbal drugs and allopathic drug can help to overcome the resistance to oral hypoglycemic and insulin therapy in case of uncontrolled diabetes mellitus. Combination of allopathy with herbal drug helps in reducing the dose of allopathic drugs which overcome the side effects of allopathic drugs.

Overview of Ayurveda

In Indian society, Ayurveda is also known as “Goddess of All Healing” and is considered as one of the most effective traditional system of medicine with number of benefits, curing and healing properties which mainly focus on bringing peace and stability in all areas of Life including spirit, body and mind.

Elements or panchamahbhutas of ayurveda

Air (Vayu), fire (Teja), water (Aap), earth (Prithvi) and ether (Akasha).

These panchamahbhutas of Ayurveda are known to promote the life human beings and the outer universe. When these elements are combined in pairs, they form three humors or the Tridosha named as Pitta (responsible for bodily chemical reactions such as metabolism and temperature), Vata (responsible for body movement) and Kapha

(for protection, lubrication, growth). All these indicate the constitution or Prakriti of an individual that shows the physical as well as mental wellness of human. The basic belief is that variance between tridosha cause diseases whereas perfect health is attained when there is stability between these fundamentals [2].

The truth behind Ayurveda is to prevent unnecessary suffering and to live a long, peaceful and healthy life. Usually allopathic treatment which uses synthetic chemicals are designed for specific target receptors and that mainly give symptomatic relief, Whereas Ayurveda implicates use of naturally obtained herbs such as spices, minerals, herbs, meditation, mental hygiene, smells, sound, yoga, exercise and mechano-procedures to eliminate the origin of the disease by strengthen balance and generate a healthy life style to stop the reoccurrence of imbalance [3].

Herbal Drugs

Since from the ancient era, natural herbal remedies possess long term beneficial effects and also these medicines were used in ancient Chinese, Egyptian, Greek and Indian medicine for therapies purposes whereas the African and American people use these herbs as part of their culture in healing rituals and Indian Ayurvedic system include herbs as most effective healing element, which are reported in the Hindu literature such as Samhitas and Vedas [4-6].

In 19th century, due to the possibility of analysis methods, researchers begins to extract and transform active ingredients from the medicinal plants, resulting in development of synthetic pharmaceuticals from crude natural herbs and this is the basic reason behind the decreasing rate of use of natural herbal medicine. However, synthetics

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pharmaceuticals are found to be comparatively more expensive and produce various unwanted side effects inspite of having powerful pharmacological action. Thus nowadays people are moving back to oldest herbal drugs therapies, which are derived from the nature and claim to be safer (Table 1) [7].

Ayurvedic Herbals

On the basis of origin, Ayurvedic medicines are divided into three classes, namely mineral, herbal and animal. Among this, recently herbal formulation has achieved great attention. According to WHO 80% of the world's citizen mainly lean on traditional herbal ayurvedic medicines for healthy life [8].

The chemical analysis of herbs is further accomplished with knowledge on the procedure of isolation, purification, characterization of active ingredients and preparation type. The term "herbal drug" refers the plant parts (seeds, roots, bark, stem, leaves, flowers and etc.) used for preparing the medicines. Every parts of the plant are completely utilized for the different- different pharmacological action they produce and then finally converted into a herbal preparations by using different methods: Decoction (Kwatha), Hot infusion (Hot infusiPhantaon), Cold infusion (Hima), Liquid extract (Arka), Powders (Churna), Resins and balsams (Guggul), Medicated oil (Taila) etc. [9].

Today's number of pharmacologically active constituents of the herbal remedies and their beneficial role in drug therapy has been identified. The pharmacological activity of herbal drugs are mainly due to phytochemicals constituent present in it which are responsible for its healing property, such as, tannins, sesquiterpenes lactones, terpenoids, saponins, alkaloids, flavonoids, alkenyl phenols and phorbol esters. Even a single herb comprise of one or more phytochemicals, which in combination works together synergistically in producing pharmacological activity.

Examples of Ayurvedic herbs with their active constituents having pharmacological activity: Arjuna (*Terminalia*) contain saponin glycosides, responsible for improving function of cardiac muscle and pumping activity of the heart, while flavonoids shows antioxidants action and vascular strengthening.

Single Herbal versus Polyherbal Formulation

Formulation of drugs in Ayurveda is mainly based on two concept: Use of single drug/plant and use of combination of more than one drugs/plants, which is known as PHF (Polyherbal formulations). This

Synthetic drugs	Functions	Plants Derivatives
Asculetin	Anti-dysentery	<i>Fraxinus rhynchophylla</i> (oleaceae)
Ajmalicine	Circulatory disorder	<i>Rauwolfia serpentina</i> (Apocynaceae)
Digitalis	Cardiac Glycosides	<i>Digitalis purpurea</i> (Plantaginaceae)
Ephedrine	Sympathomimetics	<i>Ephedra sinica</i> (Ephedraceae)
Morphine	Analgesic	<i>Papver somniferum</i> (Papaveraceae)
Noscapine	Antitussive	<i>Papver somniferum</i> (Papaveraceae)
Picrotoxin	Analeptic	<i>Anamrita cocculus</i> (Menispermaceae)
Reserpine	Anti-Hypertensive	<i>Rauwolfia serpentina</i> (Rauvolfioideae)
Quinine	Anti-malarial	<i>Cinchona ledgeriana</i> (Rubiaceae)
Salicylic acid (precursor of aspirin)	NSAIDS	<i>Filipendula ulmaria</i> (Rosaceae)
Sennosides	Laxative	<i>Cassia angustifolia</i> (Fabaceae)
Vincristine	Anticancer	<i>Catharanthus rosues</i> (periwinkle)
Xanthotoxin	Leukoderma; Vitiligo	<i>Ammi majus</i> (Apiaceae)

Table 1: Synthetic drugs which are derived from plants.

traditional therapeutic herbal approach helps in combining several medicinal herbal plants to bring extra therapeutic efficacy, mainly known as polyherbalism or polypharmacy.

The Ayurvedic literature "Sarangdhar Samhita" has highlighted the concept of polyherbalism in this traditional medicinal system. In the Indian traditional system medicine, plant products with combined extracts of plants are considered more rather than solely. It is also known that dosage forms of Ayurvedic herbals are also available in market, which mostly contains polyherbal formulations (PHF) [10,11]. Although the active phytoconstituents of individual plants have been well- identified but they are generally present in little amount, which is insufficient to gain the desirable therapeutic action to cure disorders. To overcome this problem, scientific studies showed that when these plants with varying potency combined together may produce a beneficial effects when compared to solely use of the plant. This positive theory of herb-herb interaction is referred as synergism.

Examples of combinations Ayurvedic herbs: ginger in combination with black pepper and long pepper increases their heating and mucous-reducing effects; combination of liquorica and asafoetida lower blood glucose level, obesity and dyslipidemia; black pepper and cumin are used together traditionally to reduce bloating due to weak digestion [12].

Due to synergistic effect, polyherbalism deals with some benefits which are not available in individual herbal formulation. It is obvious that the better therapeutic activity can be achieved with a multi-active phytoconstituent formulation. So, lower effective dose of the herbal formulation would be needed to attain desirable therapeutic action, which decreases the risk of unwanted bad side-effects. Because of PHFs the need of taking more than single different formulation is also eliminated which is beneficial for individual and that indirectly leads to improved therapeutic effects. All these satisfactory benefits of PHFs have increased their rate in the market when compared with solely herbal preparations. Many of the PHF have been proven to possess desired pharmacologically and clinically therapeutic effects . Examples of some of the PHF are shown in table 2 [13].

PHF are not always curable, sometimes it is also considered to be antagonistic and therefore some products should not be taken together. Such incompatibility may be due to quantitative, energetic, functional or quantitative incompatibility. For example, ghee should be avoided in same proportions with honey due to adverse tastes and temperatures; same intake laxative with astringents shows antagonistic action in which they terminate each other effects. Therefore well-designed clinical trials of these preparations are necessary prior to availability in marketing to ensure compatibility of multiple herbs in the formulation of PHF.

Reason for the Need of Polyherbal Formulation

As mentioned before, recently polyherbal formulation starts gaining its popularity in a worldwide, due to the fact that polyherbal formulation acquire some benefits which is not present in allopathic drugs.

Polyherbal formulations show high effectiveness in a various of diseases because of the presence of active phytochemicals and these therapeutic effects are further potentiated when compatible herbs are formulated together in polyherbal formulations. For example, Srivastava et al. study reported that a number of anti-diabetic PHFs such as, Diabet, Dihar, DRF/AY/5001, Diasol, Dianex, Diashis, Diabrid, Diakyur, Diasulin etc., which are confirmed to have compatible effect as those of standard allopathic drug [14,15].

PHF (Company)	Herbals	Pharmacological Action
Dihar (Rajsha Pharmaceuticals, Ahmadabad, India)	<i>Syzygium cumini</i>	Used for the treatment of hyperlipidemia
	<i>Mornordica charantia</i>	
	<i>Erbelica officinalis</i>	
	<i>Gymnema sylvestre</i>	
	<i>Enicosternna littorale</i>	
	<i>Azadirachta indica</i>	
	<i>Tinospora cordirolia</i>	
Diabet (Herbal Galenicals, India)	<i>Curcuma longa</i>	Antidiabetic
	<i>Cosciniurn fenestratum</i>	
	<i>Strychnos potatorum</i>	
	<i>Tamarindus indica</i>	
	<i>Tribulus terrestris</i>	
Arthosansar (Pradhan Herbal Company, India)	<i>Phyllanthus reticulatus</i>	Antiarthritic
	<i>Corniphora wightii</i>	
	<i>Bosvellia serrata</i>	
	<i>Pluchea lanceolata</i>	
	<i>Ricinus cornmunis</i>	
	<i>Zingiber officinale</i>	
Kutajarista (Laboratory preparation)	<i>Withani somnifera</i>	Useful in the treatment of sprue, dysentery and diarrhea
	<i>Madhuca longifolia</i>	
	<i>Holarrhena</i>	
	<i>antidysenterica</i>	
	<i>Gmelina arborea</i>	
	<i>Woodfordia fruticosa</i>	
	<i>Vitis vinifera</i>	
Vidakana Choomam	<i>Honey</i>	Useful for liver disorders especially jaundice and steatosis
	<i>Jaggery</i>	
	<i>Erbelia ribes</i>	
	<i>Morigna oleifera</i>	
Triglize (Apex Laboratories Ltd., India)	<i>Piper longum</i>	Used for the treatment of obesity, hypertension, ischemic heart diseases and peripheral vascular diseases
	<i>Terminalia arjuna</i>	
	<i>Cissus quadrangularis</i>	
	<i>Boerhaavia diffusa</i>	
	<i>Cornniphora mukul</i>	
	<i>Phyllanthus embilica</i>	
	<i>Terminalia bellirica</i>	
	<i>Terminalia chebula</i>	
	<i>Tribulus terrestris</i>	
	<i>Allium sativum</i>	
<i>Trigonalla</i>		
Bharangyadi	<i>foenumgraecum</i>	Antiasthmatic
	<i>Clerodendrum serratum</i>	
	<i>Hedychiurn spicatum</i>	
	<i>Inula racernosa</i>	

PHF=Polyherbal formulation

Table 2: Examples of PHF.

PHFs are commonly found to possess wide therapeutic range. Most of formulations show activity even at a low dose and safe/effective at high dose, thus they have risk to benefit ratio. Example : "Diakyur" a polyherbal formulation used as hypoglycemic. Joshi et al. study showed the Diakyurat a high dose of 12800 mg/kg p.o. shows no toxic symptoms up to 72 h in the experimental animals; whereas sub-acute toxicity test indicates that Diakyur is safe for long term treatment at the dose of 1600 mg/kg p.o. This is in contra with the allopathic hypoglycemic drugs, sulfonyleureas : glicazide and tolbutamide, glipizide which have narrow therapeutic index.

Often, as compared to allopathic drugs, PHFs (those appropriately manufactured and used) also possess few side effects. Although modern allopathic comes with unwanted side-effects, such as vomiting, fatigue, diarrhea, seizures hair loss, confusion, insomnia, dry mouth, impotency, organ toxicities and even death. Example patients prescribed with NSAIDs for rheumatoid arthritis (RA) treatment may also experience renal and gastrointestinal side effects, including gastric ulceration, salt, dyspepsia, and fluid retention with hypertension. For this, they may go with Ayurvedic therapies in which these side effects are absent or negligible.

Problems to PHF

Despite of fact that polyherbal formulations are effective to mankind in many different ways, because still they are challenged by some unavoidable disadvantages, which not only affect their efficacy but also affect their ability in treatments. These problems are mainly due to the sources and defect in manufacturing process, Ayurvedic practitioners, patients as well as the law and regulations. Also there is a big misinterpretation that PHFs are always safer. Charaka Samhita also described that there are some side effects with Ayurvedic medicines when they prepared or used wrongly.

Ayurvedic herbs used in PHFs form are reported to contribute to drug-herb interactions (Table 3).

Allopathic Medicine

Allopathic medicine is commonly used by homeopaths to treat or suppress symptoms or pathophysiologic processes of diseases or conditions. Allopathic medicine mainly consists of the science of anatomy, physiology and the structure-function relationship between cells and biochemistry tissues and organs. It emphasis on diagnosis, treatment and cure for illnesses by pharmaceutical drugs, radiation, surgery, and other treatment methods. Allopathy is based on major three steps: Hypothesis, experimentation and observation and, finally, the theory or the conclusion.

Advantages of Allopolyherbal Formulation

There are a number advantages associated with using allopolyherbal medicines as opposed to pharmaceutical products. Examples include the following:

1. Reduces risk of unwanted side effects: herbal drug composed of natural herbs and extracts of vegetables, fruits, spices, etc., which helps in curing multiple incurable diseases without any side effects which is sometime not possible with allopathy therapy. While, most of the allopathic medicines are synthetically prepared and hence they have some or the other side effect. Hence, combination of polyherbal with allopathic medicine

Ayurvedic herbs in PHFs	Possible drug-herb interaction
Garlic (<i>Allium sativum</i>), Ginger (<i>Zinger officinale</i>), Ginkgo (<i>Ginkgo biloba</i>)	Interfere with NSAIDs and warfarin by enhancing the risk of bleeding, mainly due to inhibition of platelet aggregation, limited production of coagulation mediators
Meadowsweet (<i>Filipendula ulmaria</i>) for anti-inflammatory action	Displacement of highly protein bound drugs. (e.g., Warfarin and Carbamazepine, thus increasing adverse effects of these drugs)
St. John's wort (<i>Hypericum perforatum</i>) for depression treatment	Induce hepatic microsomal enzyme cytochrome P-450, thus increases the metabolism of certain drugs such as digoxin and theophylline, rendering them less effective.

PHFs: Polyherbal Formulation; NSAIDs: Non- Steroidal anti-inflammatory drugs

Table 3: Ayurvedic herbs in PHFs and their possible drug-herb interaction.

Polyherbal Drugs	Allopathic drugs
Trigonella foenum-graceum	Glipizide
Momordica charantia	
Aegle marmelos	
Wheat germ oil	Glibenclamide
Fresh juice of coriander sativum	
Aloe vera	
Camellia sinensis	Glibenclamide
Foeniculum vulgare	
Punica granatum	
Trigonella foenum-graceum	

Table 4: Allopolyherbal medicine available.

reduces or overcome the side effect of allopathic drug having large number of side effect.

- Effectives with chronic conditions: allopolyherbal formulations are tends to be more beneficial or effective for long-standing health complaints.
- They are also effective at low dose and safe at high dose [14,15].
- It helps to treat most of chronic condition which cannot be completely cured with allopathic medicines.

All the above mentioned reasons: safety, Effectiveness, cheap and better acceptance, made PHF a primarily treatment of choice, hence higher rate of acceptance by the patients and magnificent therapeutic effect is ensured (Table 4).

Conclusion

The data suggest that using combination of allopathic drugs with polyherbal formulation gives a beneficial effect. In Allopolyherbal formulations the effect of drug will be same but the side effect is overcome by the reduction of dose of allopathic drug and the combination of allopathic and herbal drug as compared to synthetic ones. Combination of allopathic drug with polyherbal has been proved to most effective rather than using them separately. The unwanted side effects of allopathic drugs can also be reduced or eliminated with prolonged use of polyherbals with allopathic drugs. It was an effort and

steps to counteract or retard the risk factors associated with allopathic drugs by the use of herbs along with them.

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