

An Update Review on Polyherbal Formulation: A Global Perspective

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ABSTRACT

Polyherbal formulation has been used all around the world due to its medicinal and therapeutic application. It has also known as polyherbal therapy or herb-herb combination. This article enlists some commercial and non-commercial polyherbal formulation all around the world. The authors have focused last six years of Publications on Polyherbal formulation in different countries and found that India have topped among the number of publications on polyherbal formulation followed by Nigeria, South Korea, Pakistan and Bangladesh. List of other countries also mentioned on scientific contribution of polyherbal therapy. The authors have mentioned list of publications on polyherbal formulation in the treatment of different diseases are based on pharmacological activity in the year 2015 and found that most polyherbal formulation found in the treatment of diabetes followed by an antioxidant,

Hepatoprotective, Anti-inflammatory and anxiety disorder.

Keywords: Polyherb; Traditional medicine; Herbal combination; Polyherbal therapy; phytotherapy

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INTRODUCTION

Dependence of human beings on plants dates back to the origin of the human race. The basic needs of life for human being are shelter, clothing, food, flavors and fragrances and not the least, medicines. Plants are a common source of medicine. Plants have shaped the creation of refined traditional medicine structures among which are Ayurvedic, Unani and Chinese are common. In Indian, Egyptian, Chinese, Roman and the Greek civilizations, plants were the very foundation of care system and deemed to possess a divine and supernatural power of healing.¹⁻² The Edwin Smith Papyrus (1700 BC) is an ancient Egyptian medical text on wound healing.³ Since ancient times, herbs have been used as natural remedies for curing many physiological disorders. Traditional medicinal literature appreciated their value as nature's gift to mankind for the healing of illnesses.⁴

Traditional medicines

The treatment of injury or disease by plants or plant material, either in the crude or processed state, is known as traditional herbal medicine. The medicinal plants with ethnomedicinal values are currently being screened for their therapeutic potential.⁵ The ethnopharmacological approach toward the understanding and appraisal of traditional and herbal medicines is characterized by the inclusions of the social as well as the natural sciences. Anthropological field-observations describing the local use of nature-derived medicines are the basis for ethnopharmacological enquiries.⁶ Herbal product has been used abundantly over the years in curing several diseases. Natural products and related structures are essential sources of new pharmaceuticals, because of the immense variety of functionally relevant secondary metabolites of microbial and plant species.⁷

Herb-herb combinations

Herb-herb combinations also known as polyherbal therapy have been used in Chinese medicine practice for thousands of years, yet scientific evidence of their therapeutic benefits is lacking.⁸ Drug combination

often produces a promising effect in treatment of diseases over a single drug. The concept of drug combination has been well established in Western medicine and remarkable success has been achieved over the decades. In recent years, drug combination therapies in cancer and infectious diseases have offered new hope to patients.⁹ Naturally occurring herbs and herbal ingredients organized into certain formula have been shown to have potential interaction effects. These include mutual enhancement, mutual assistance, mutual restraint and mutual antagonism.¹⁰ In the Ayurvedic system of medicine mainly polyherbal compounds are used for treatment of various infections. Bharangyadi polyherbal is a mixture of *Clerodendrum serratum*, *Hedychium spicatum* and *Inula racemosa*.¹¹ Indukantha Ghritha (IG) is a polyherbal preparation consisting of 17 plant components widely prescribed by ayurvedic physicians for various ailments.¹² The Unani system of medicine is also gaining global acceptance due to the amazing clinical efficiency of the formulations. Although Unani medicines have long been used, there is negligible documented evidence regarding their safety and effectiveness. The lack of evaluation has, in turn, slowed down the development of regulations and legislations.¹³ Majoon Suranjan (MS) is a polyherbal formulation consist of *Lawsonia inermis*, *Foeniculum vulgare*, *Capparis spinosa*, *Terminalia chebula*, *Ipomoea turpethum*, *Apium graveolens*, *Zingiber officinalis*, *Convulvulus scammony*, *Colchicum luteum*, *Cassia angustifolia*, *Piper nigrum*, *Coriandrum sativum*, *Rosa damascus*, *Origanum vulgare*, *Pyrethrum indicum*, *Plumbago zelanicum*, *Verbascum thapus*, *Ricinus communis* oil used in Unani system of medicine for the treatment of rheumatoid arthritis (RA).¹⁴ A successful attempt has made using *Cissus rotundifolia* leaf extracts, *Cassia abbreviate* bark extract, *Zanthoxylum chalybeum* bark extract and *Zanthoxylum chalybeum* leaf extract form the polyherbal formulation and further evaluated for in-vitro studies.¹⁵

Polyherbal Formulation

Studies showed that selected individual plants contained abundant quantity of phenolics and flavonoids and their polyherbal combination

Table 1: List of commercially available polyherbal product

Commercial Name	Formulation with scientific names	Country	Pharmacological Activity	Scientific evaluation	Reference
Diabrid	<i>Gymnema sylvestre, Momordica charantia, Eugenia Jambolana, Trigonella graeceium</i>	India	Anti-diabetic	Clinical trial Phase-1	22
Hepax-A	<i>Plumbago zeylanica, Picrorrhiza kurroa, Piper nigrum, Zingiber officinale, Sodii carbonas impura, Phyllanthus emblica, Terminalia chebula, Calcii oxidum Potassii carbonas impura.</i>	India	Hepatoprotective	In-vivo	23
Majoon Suranjan	<i>Lawsonia inermis, Foeniculum vulgare, Capparis spinosa, Terminalia chebula, Ipomoea turpethum, Apium graveolens, Zingiber officinalis, Convulvulus scammony, Colchicum luteum, Cassia angustifolia, Piper nigrum, Coriandrum sativum, Rosa damascus, Origanum vulgare, Pyrethrum indicum, Plumbago zelanicum, Verbascum thapus, Ricinus communis oil</i>	India/Pakistan	Antiarthritic activity	In-vivo	14,24
Praneem	<i>Azadirachta indica (Neem) along with purified Saponins from Sapindus mukerosi and Mentha citrata oil</i>	India	Vaginal microbicides	Clinical trial Phase-2	25,26
Zyflamend	<i>Ocimum sanctum, Curcuma longa, Zingiber officinale, Camellia sinensis, Rosmarinus officinalis, Polygonum cuspidatum, Berberis vulgaris, Origanum vulgar, Scutellaria baicalensis and Coptis chinensis</i>	The United State of America	Prostate cancer	In-vitro	27
Varunadi Ghrittha	<i>Crataeva religiosa, Strobilanthes ciliatus, Asparagus racemosus, Plumbago zeylanica, Chenomorpha fragrans, Aegle marmelos, Aristolochia bracteolate, Solanum melongena, Aerva lanata, Pongamia glabra, Holoptelia integrifolia, Premna corymbosa, Terminalia chebula, Moringa olifera, Desmostachya bipinnata, Semicarpus anacardium,</i>	India	Head and neck cancer	Clinical trial Phase-1	28
Ovoutoline	<i>Glycyrrhiza glabra, Saraca indica, Symplocos racemosa, Tinospora cordifolia, Asparagus racemosus, Valeriana walchii and Holarrhena antidysenterica</i>	India	post-menopausal symptoms	In-vitro	29
Daouri	<i>Khaya senegalensis, Odina acida, Lophira lanceolata, Paullinia pinnata L. and Pteleopsis suberosa</i>	Togo/Ghanna	Anti-diarrhoeal, anti-malarial	In-vivo	30
Yoyo Bitters	Unknown	Nigeria	Anti-Oxidant	In-vivo	31
KOB03	<i>Atractylodis RhizomaAlba, Astragali Radix, Saposhnikoviae Radix, Osterici Radix, Scutellariae Radix</i>	South Korea	Anti-allergic	In-vivo	32
DHU001	<i>Ficus carica Linn, Liriope spicata Lour., Platycodon grandiflorum Jacq., Schisandra chinensis Baill., Glycyrrhiza uralensis Fisch., Zingiber officinale Roscoe., Mentha arvensis Linne var piperascens</i>	South Korea	contact dermatitis	In-vivo	33
Okudiabet	<i>Stachytarpheta angustifolia, Alstonia congensis bark and Xylopia aethiopica fruits extract</i>	Nigeria	Anti-diabetic	In-vivo	34
Joshanda	<i>Zizyphus jujuba, Onosma bracteatum and Glycyrrhiza glabra</i>	Pakistan	Anti-bacterial, common cold	In-vitro	35

Continued...

Table 1: List of commercially available polyherbal product

Commercial Name	Formulation with scientific names	Country	Pharmacological Activity	Scientific evaluation	Reference
Entoban	<i>Aegle marmelos</i> , <i>Berberis aristata</i> , <i>Butea frondosa</i> , <i>Holarrhena antidysenterica</i> , <i>Myrtus communis</i> and <i>Quecrus infectoria</i>	Pakistan	Anti-oxidant	In-vitro	36
Wu-Zi-Yan-Zong	<i>Cuscuta chinensis</i> Lam., <i>Lycium barbarum</i> L., <i>Rubus chingii</i> Hu., <i>Schizandra chinensis</i> (Turcz.) Baill. <i>Plantago asiatica</i> L., <i>Epimedium brevicornu</i> Maxim	China	neuroinflammatory disease	In-vivo	37
IBS-20	20-herb Chinese medicinal formula	China	Anti-inflammatory	In-vivo	38
Ben-Cha-Lo-Ka-Wi-Chian	Unknown	Thailand	Anti-pyretic and antinociceptive	In-vivo	39,40
AVS022	<i>H. perforate</i> , <i>C. micracantha</i> , <i>C. indicum</i> , <i>F. racemosa</i> , and <i>T. triandra</i>	Thailand	Anti-oxidant	In-vitro	41
Tongkat Ali	<i>Eurycoma longifolia</i> Jack., <i>Cistanche deserticola</i> Y.C.Ma.	Malaysia	Increase Sexual stamina	In-vivo	42
Pasak Bumi	<i>Eurycoma longifolia</i> , <i>Curcuma longa</i> L.	Malaysia	Increase passion in women.	Not found	43,44
EMSA eritin	<i>Glycine max</i> , <i>Cocos nucifera</i> and <i>Red rice</i> .	Indonesia	Stimultaion of erythropoiesis	In-vivo	45
Wanderer plus,	<i>Paeonia lactiflora</i> , <i>poria cocos fungus</i> , <i>Atractylodes macrocephala</i> , <i>Paeonia suffruticosa</i> , <i>Gardenia jasminoides</i> , <i>Zingiber officinale</i> , <i>Glycyrrhiza uralensis</i> , <i>Bupleurum chinense</i> , <i>Anglica sinensis</i> , <i>Mentha haplocalyx</i>	China	Depressive disorder	In-vivo	46
Nefang	<i>Mangifera indica</i> , <i>Psidium guajava</i> , <i>Carica papaya</i> L., <i>Cymbopogon citratus</i> , <i>Citrus sinensis</i> , <i>Ocimum gratissimum</i>	Cameroon	Anti-malarial	In-vivo	47
Prasarani sandhan	<i>Paederia foetida</i> L., <i>Piper longum</i> L., <i>Piper chaba</i> Hunter., <i>Plumbago zeylanica</i> L., <i>Zingiber officinale</i> Roscoe., <i>Allium sativum</i> L.	Bangladesh	Immunomodulatory	In-vivo	48

with green tea was found to produce best antioxidant activity among all individual extracts.¹⁶ In majority of traditional systems, diabetes is better managed by the herbs combination (Polyherbal) instead of single herb because of synergism and less side effects.¹⁷ Diabetic wound cream prepared by using polyherbal formulation was found to be effective as well as safe in healing diabetic foot ulcers like the standard silver sulphadiazine cream.¹⁸

The antiinflammatory activity of the polyherbal formulation Entox(*) consist of *Allium cepa*, *Allium sativum*, *Aloe vera*, *Cajanus cajan*, *Coccinia indica*, *Caesalpinia bonducella*, *Ficus bengalensis*, *Gymnema sylvestre*, *Momordica charantia*, *Ocimum sanctum*, *Pterocarpus marsupium*, *Swertia chirayita*, *Syzgium cumini*, *Tinospora cordifolia* and *Trigonella foenum graecum* was investigated in rats for acute and sub-acute models of inflammation using carrageenan-induced rat paw edema and cotton pellet granuloma methods respectively at a dose of 300 mg/kg and 600 mg/kg administered orally. The formulation showed a significant

anti-inflammatory activity in both the experimental models and the activity was comparable to that of the standard drug, indomethacin.¹⁹

BHUx, a patented polyherbal formulation consisting of the aqueous fraction of five medicinal plants of the ayurvedic system, has significant anti-inflammatory properties through inhibition of cyclooxygenase-2 and lipooxygenase-15.²⁰

The polyherbal formulation "RIPARE" containing ingredients such as *Boswellia serrata*, *Commiphora mukul*, *Cissus quadrangularis*, *Vitex negundo*, *Centella asiatica*, *Tinospora cordifolia*, *Curcuma longa*, *Euphorbia hirta* and *Piper nigrum*. This formulation is known to possess antiarthritic activity.²¹ List of some important polyherbal formulation worldwide is mentioned in table 1 and table 2. Table 3 represents publications on Polyherbal formulation in different countries since 2010 till now whereas table 4 specifies list of number of publications on polyherbal formulation, evaluated in treatment of different diseases or pharmacological activities in year 2015.

Table 2. List of other polyherbal extract under evaluation

List of Plants	Country	Treatment	Status of evaluation	References
<i>Coccinia indica</i> , <i>Sida cordata</i> , <i>Scoparia dulcis</i> .	India	Hepatoprotective	In-vivo	49
<i>Moringa oleifera</i> , <i>Raphinus sativus</i> , and <i>Amaranthus tricolor</i>	India	Anti-ulcer	In-vivo	50
<i>Picorrhiza kurroa</i> , <i>Emblica officinalis</i> , <i>Syzygium cumini</i> , <i>Trachyspermum ammi</i> , <i>Musa paradisiacal</i> , <i>Terminalia arjuna</i> , <i>Pistacia vera</i> , <i>Zingiber officinale</i> , <i>Allium cepa</i> , <i>Aloe vera</i> , <i>Eugenia caryophyllus</i> , <i>Avena sativa</i>	India	Dyslipidemia	In-vitro	21
<i>A. conyzoids</i> , <i>C. scandens</i> and <i>M. villosus</i>	Nigeria	Wound healing	In-vivo	51
<i>Terminalia arjuna</i> , <i>Centella asiatica</i> and <i>Curcuma longa</i>	India	Wound healing	In-vivo	52
<i>Morinda Citrifolia L.</i> and <i>Beta Vulgaris L.</i>	India	Anti-oxidant	In-vitro	53
<i>Rhynchosia resinosa.</i> , <i>Ozoroa insignis.</i> , <i>Entada abyssinica .</i> , <i>Maytenus senegalensis.</i> , <i>Lannea schimperi.</i>	Tanzania	Anti-ulcer, anti-microbial	In-vitro/in-Vivo	54
<i>Artemisia afra</i> , <i>O. asteriscoides</i>	South Africa	Respiratory Infection	In-vitro	55
<i>Achillea millefolium L.</i> , <i>Agathosma betulina Bartl. & Weidl.</i> , <i>Salvia officinalis. L.</i> , <i>Taraxacum officinalis L.</i> , <i>Thymus vulgaris. L.</i> , <i>Trigonella foenum-graecum L.</i> and <i>Urtica urens L.</i>	South Africa	Anti-oxidant	In-vitro	56
<i>Achillea millefolium L.</i> , <i>Hyssopus officinalis L.</i> , <i>Equisetum arvense L.</i> and <i>Echinacea purpurea L</i>	Romania	Anti-oxidant	In-vitro	57
<i>Allium sativum</i> , <i>Cinnamomum zeylanicum</i> , <i>Citrullus colocynthis</i> , <i>Juglans regia</i> , <i>Nigella sativa</i> , <i>Olea europaea</i> , <i>Punica granatum</i> , <i>Salvia officinalis</i> , <i>Teucrium polium</i> , <i>Trigonella foenum</i> , <i>Urtica dioica</i> , and <i>Vaccinium arctostaphylos</i>	Iran	Anti-diabetic	In-vivo	58
<i>Malva sylvestris</i> and <i>Solanum nigrum</i>	Iran	Wound healing	In-vivo	59
<i>Cystoseira trinodis</i> , <i>Allium sativum</i> , <i>Glycyrrhiza glabra</i> , <i>Zingiber officinale</i>	Egypt	Anti-diabetic	In-vivo	60
<i>Nigella sativa</i> , <i>Hemidesmus indicus</i>), <i>Smilax glabra</i>	Srilanka	Antihepatocarcinogenic	In-vivo	61
<i>Persea americana</i> , and <i>Vernonia amygdalina</i>	Ghanna	Anti-hypertensive	In-vivo	62
<i>Alchornea cordifolia</i> , <i>Psidium guajava</i> , <i>Tridax procumbens</i> , <i>Zanthoxylum zanthoxyloides</i> , <i>Eugenia caryophyllata</i>	Ghanna	Superficial mycoses	In-vivo	63
<i>Zingiber officinalis</i> , <i>Terminalia bellerica</i> and <i>Orchis mascula</i>	Pakistan	Anti-hypertensive, antidyslipidemic, endothelial modulating activities	In-vivo	64
<i>Foeniculum vulgare</i> and <i>Brassica alba</i>	Bangladesh	Antidiabetic	In-vivo	65

Table 3: Publications on Polyherbal formulation in different countries since 2010 till Dec 2015.

Countries
India
Nigeria
South Korea
Pakistan
Bangladesh
China
Ghana
South Africa
Iran
Thailand
Indonesia
The United State of America
Malaysia
Spain
Canada
Cameroon
Sri Lanka
Tanzania

DISCUSSION

Currently scientist are trying to explore development of new Polyherbal therapy or using old traditional polyherbal formulation that have been used for many decades such as Ayurveda, whose history goes back to 5000 BC., is one of the ancient health care systems,⁶⁶ Korean traditional medicine such as Mahwangyounpae-tang (MT), consisting of 22 types of herbal extracts in treatment of respiratory disorder,⁶⁷ African Herbal Formula (AHF) consists of a combination of plant materials originally developed by a family in southern part of Nigeria and passed on to generations. Over the years, AHF has been applied by members of the family and close-associates for all kinds of health problems and it is very popular among the low socio-economic class,⁶⁸ Haya people of Kagera region in north western Tanzania are endowed with a culture rich in traditional Medicine practice owed to an extensive intercultural exchange among the diverse ethnic tribes of the Lake Victoria Basin⁶⁹ and Traditional Unani medicine in Pakistan and India where it is popularly practiced among the large segment of its population. It originated in Greece, founded by old ancient Greek philosophers, and was documented by Muslims during the glorious period of Islamic civilization. It was brought to the Indo-Pak subcontinent by Muslim scholars and practiced here for centuries.⁷⁰

CONCLUSION

Although polyherbal formulation is commonly used in many parts of the world, but the scientific evidence is still lacking. Many herbal therapies are still under in-vivo evaluation and have not been evaluated by clinical

Table 4: List of number of publications on polyherbal formulation, evaluated in treatment of different diseases in year 2015

Treatments/Pharmacological activities	Number of publications
Diabetes	13
Anti-Oxidant	7
Hepatoprotective	6
Anti-inflammatory	5
Arthritis	4
Anxiety disorder	4
Antidiarrheal	2
Anti-malarial	2
Anti-cancer	2
Anemia	2
Wound	2
Analgesic	2
Anti-allergic	2
Immunomodulatory activity	2
Abortifacient activity	1
Antiurolithiatic Activity	1
post-menopausal symptoms	1
Anthelmintic	1
Fever	1
Anti-spasmodic	1
Anti-asthmatic	1
Osteoporosis	1
Anti-microbial	1

trials. Moreover, safety evaluations such as toxicological studies have not performed. There is need of time to evaluate polyherbal formulation using scientific methods such as clinical trial, possible bioactive compounds and mechanism of action for the future world.

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