Turkish Online Journal of Qualitative Inquiry (TOJQI)
Volume 13, Issue 1, January 2022: 1658-1671

# A Review on Poly herbal Formulations as Medicine: A Global Perspective

*Nargish Jahan[1], Diksha Singh[2]

1,2 Sheat college of pharmacy Gahni Varanasi U.P., India

*Corresponding Author
Nargish Jahan
M.Pharm( Pharmacology)
Email: nargishj255@gmail.com

## Abstract

Medicinal and therapeutic effect of herbal-herbal formulation i.e. Polyherbal formulation has been widely applied in the treatment of various diseases in all over world due to its potential benefit along with easily availability and it neutrality. Herb-herb combination is known as polyherbal preparations for medicinal purpose. This review article overviews the commercial and non-commercial polyherbal formulation's properties. Author had focused on last five-year research studies of different countries in which India was found higher number of research studies on polyherbal products which followed by Bangladesh, South Korea, Pakistan, Nigeria. This article explored scientific contribution of many other countries in formulation of polyherbal products which will make an impact on development of poly herbal preparation in management of various chronic diseases. In addition, it reviewed a list of research studies on polyherbal preparations in the management of different diseases along with pharmacological activities. Most of the polyherbal formulations found to be active as antidiabetic, anti-inflammatory, anti-cancer, anti-anxiety and hepatoprotectives.

**Keywords:** Polyherbal Formulation, herb-herb, commercial, non-commercial, herbal combonation.

## INTRODUCTION

People are depending on natural plants because they give therapeutic as well as medicinal effects against various diseases. Natural plants have been identified before the birth of human beings. A human being's basic needs include shelter, clothing, food, flavor and fragrance, and, of course, medicine. Medicine is frequently derived from plants [1]. Ayurvedic, Unani, and Chinese traditional medicine structures have all been influenced by plants. Plants were revered as divine and supernatural healers in ancient cultures like those of India, Egypt, China, Rome, and Greece. Ancient Egyptian healthcare text on wound healing, the Edwin Smith Papyrus (1700 BC) [2].

Throughout history, herbal remedies have been used to treat a wide range of physical ailments [3]. As a gift from nature to mankind for the treatment of illness, traditional medical literature regarded them highly [4].

**Traditional medicines**

Traditional herbal medicine refers to the use of plants or plant material for the treatment of injury or disease, either in its raw or processed form. Ethnomedicinal plants are currently being tested for their therapeutic potential. Traditional and herbal medicines are understood and evaluated using an ethnopharmacological approach that incorporates aspects of both the social and natural sciences. Ethnopharmacological studies are based on anthropological field observations [4,5}. As a remedy for a variety of ailments, herbal products have been used extensively over the years. There is a vast array of main functional relevant secondary metabolites found in microbial and plant species that can be used to develop new pharmaceuticals of local use of nature-derived medicines [6].

**Herb-herb combinations**

In Chinese medicine, polyherbal therapy, or the use of multiple herbs at once, has been practiced since ancient times, but there is little scientific evidence to support its efficacy as a treatment. A combination of drugs is often more effective in treating a disease than a single drug alone. Over the past few decades, Western medicine has been using the concept of combination therapy to great effect [8]. Cancer and infectious disease patients now have new hope thanks to drug combination therapies that have been developed in recent years. There has been evidence that the combination of naturally occurring herbs and herbal components in a formula can have interaction effects [9]. These include mutual aid, mutual restraint, and mutual animosity. Polyherbal compounds predominate in the Ayurvedic medical system when treating various infections [10]. An herbal combination of Clerodendrumserratum, Hedychium spicatum, and Inula racemose is known as Bharangyadipolyherb [11]. Ayurvedic doctors commonly prescribe the polyherbal remedy IndukanthaGhritha (IG), which contains 17 different plant constituents, for a variety of ailments. Global acceptance is also being gained for Unani systems of medicine due to their clinical efficacy [13]. Despite the fact that Unani medicines have been around for a long time, there is no documented evidence that they are safe or effective.As a result of the lack of evaluation, the development of regulations and legislations has been held back [14]. Unani medicine uses a polyherbal formulation known as MajoonSuranjan (MS) that includes Lawsoniainermis (also known as Lawsoniainermis), Foeniculum vulgare (also known as Foeniculum vulgare), Capparis spinosa (also known as Capparis spinosa), Terminalechebula (also known as Ipomoea turpethum), Apium graveolens (also known as Apium graveo (RA). Cissus rotundifolia leaf extracts, Cassia abbreviates bark extract, Zanthoxylum chalybeum bark extract, and Zanthoxylemchalybeum leaf extract from the polyherbal formulation were successfully used for in-vitro studies, and the results were further studied [15, 16].

***Polyherbal Formulation***

Polyherbal combination or mixture with green tea was shown and producing the greatest antioxidant efficacy among individual extracts of phenolic and flavonoids in specific individual plants [17].A combination of polyherbal therapy is especially preferred instead of a single moiety of plant molecules because most traditional systems are used in the treatment of diabetes because of its show synergistic effect and minimum side effects [18]. In the treatment of diabetic wound, a polyherbal cream have been proved for effective and safe treatment in context with healing more efficiently diabetic wound ulcer than silver sulfadiazine wound healing cream [19,20].

Entox® is a polyherbal formulation, which has been shown anti-inflammatory activity in rat. Entox® formulation was made by several plant active ingredients including such as Allium cepa [21], Aloe vera, Allium sativum, Cajanus cajan, Caesalpinia bonducella, Coccinia indica, Gymnemasylvestre, Pterocarpus marsupium, Momordica charantia, Swertia chirayita, Ficus bengalenesis, Ocimum sanctum, Tinospora cordifolia, Syzigiumcumini as well as Trigonella foenum graecum [22]. The Carrageenan induced rat paw inflammation and cotton pellet granuloma approaches was used for checking acute and sub-acute inflammation in rat, the oral dose capacity 300-600 mg/kg [23]. Anti-inflammatory activity of the polyherbal formulation of Entox® was similar to that of the conventional medication indomethacin in both experimental models [24]. 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 lipoxygenase-15 [25].

RIPARE is a polyherbal formulation which has been used in the treatment of arthritis [26]. This formulation contains active components such as Vitex negundo, Commiphoramukul, Boswellia serrata, Centella asiatica, Cissus quadrangularis, Piper nigrum, Curcumin longa, and Tinospora cordifolia [27]. A polyherbal formulation list is mentioned in table 1 and table 2 worldwide. In table 3 polyherbal formulation publications have been studied in many countries between 2010 to the present, while in 2015, the number of publications based on polyherbal formulations in the treatment of various illnesses or pharmacological activity has been listed in table 4 [28].

Table 1. List of other polyherbal extract under evaluation.

| **Plants Name** | **treatment** | **Place where found** | **Type of Study** | **Reference** |
|---|---|---|---|---|
| Terminaliaarjuna, *Picorrhizakurroa, Musaparadisiacal, Zingiber officinale, Syzygium, cumini, Allium cepa, Emblica officinalis, Eugenia caryophyllus, Aloevera* | Dyslipidemia | India | In-vitro | 21 |

| | | | | |
|---|---|---|---|---|
| *BetaVulgarisL. and MorindaCitrifoliaL* | Anti-oxidant | India | In-vitro | 53 |
| *Curcumalonga, Centellaasiatica, Terminaliaarjuna,* | Woundhealing | India | In-vivo | 52 |
| *M. villosus, C.scandens, A.conyzoids* | Woundhealing | Nigeria | In-vivo | 51 |
| *Thymus vulgaris. L., Salviaofficinalis.L., Trigonellafoenum-graecumL. Achillea millefolium L., Taraxacumofficinalis L., AgathosmabetulinaBartl.&Weidl. , UrticaurensL* | Anti-oxidant | SouthAfric a | In-vitro | 56 |
| *Punica granatum, Teucriumpolium, Citrullus colocynthis, Trigonellafoenum, Nigellasativa, Urtica dioica, Juglans regia, Vacciniumarctostaphylos, Cinnamomum zeylanicum, Salviaofficinalis Allium sativum, Olea europaea,* | Anti-diabetic | Iran | In-vivo | 58 |
| *Glycyrrhizaglabra, Cystoseiratrinodis, Zingiberofficinale, Allium sativum,* | Anti-diabetic | Egypt | In-vivo | 60 |
| *Vernoniaamygdalina, Perseaamericana,* | Anti-hypertensive | Ghanna | In-vivo | 62 |
| *Terminaliabelerica, Orchis mascula, Zingiberofficinalis,* | Antidyslipidemic, endothelialmodulatin g activities, Anti-hypertensive, | Pakistan | In-vivo | 64 |
| *Brassicaalba, Foeniculumvulgare* | Antidiabetic | Bangladesh | In-vivo | 65 |
| *Solanumnigrum, Malvasylvestris* | Woundhealing | Iran | In-vivo | 59 |
| *Smilax glabra, Nigellasativa, Hemidesmusindicus* | Anti-hepatocarcinogenic | Sirilanka | In-vivo | 61 |
| *Hyssopus officinalis L., EchinaceapurpureaL., Achillea millefolium L EquisetumarvenseL.* | Anti-oxidant | Romania | In-vitro | 57 |

| | | | | |
|---|---|---|---|---|
| *Ozoroa insignis., Maytenussenegalensis., Rhynchosiaresinosa., Lanneaschimperi* | anti-microbial, Anti-ulcer, | Tanzania | in-Vivo/in-vitro | 54 |
| *Sidacordata,Scopariadulcis, Cocciniaindica,* | Hepatoprotective | India | In-vivo | 49 |
| *Artemisiaafra,O.asteriscoides* | RespiratoryInfection | SouthAfrica | In-vitro | 55 |
| *Amaranthus tricolor, Raphinus sativus, Moringa oleifera* | Anti-ulcer | India | In-vivo | 50 |
| *Zanthoxylum zanthoxyloides, Alchorneacordifolia, Eugeniacaryophyllata, Tridaxprocumbens, Psidiumguajava* | Superficial mycoses | Ghanna | In-vivo | 63 |

**Table2:**Listof commercially available polyherbal product

| Formulation name | Composition | Pharmacological Activity | Study method | Reference |
|---|---|---|---|---|
| Hepax-A | *Zingiber officinale, Terminaliachebula, Potassiicarbonasimpura. Pipernigrum, Sodii carbonas impura, Plumbago zeylanica, Calciioxidum, Picrorrhizakurroa, Phyllanthusemblica,* | Hepatoprotective,<br><br>Antipyretic | In-vivo | 23 |
| Praneem | *Menthacitrataoil, purifiedSaponins from Sapindusmukerosi, Azadirachta indica (Neem)* | Vaginalmicrobicides | Clinical trialPhase-2 | 25,26 |
| VarunadiGhritha | *Plumbago zeylanica, Aristolochiabracteolate, Solanum melongena, Holoptelia integrifolia, Terminaliachebula, Semicarpusanacardium, Crataevareligiosa, Asparagus racemosus, Aeglemarmelos, Pongamia glabra, Moringaolifera, Premnacorymbosa, Chenomorphafragrans, Strobilanthes ciliates, Aerualanata, Desmostachyabipinnata,* | Head and neckcancer | Clinical trialPhase-1 | 28 |
| Daouri | *Pteleopsissuberosa,* | Anti-diarrhoel, | In-vivo | 30 |

| | | | | |
|---|---|---|---|---|
| | *Lophiralanceolata, Khaya senegalensis, Paullinia pinnata L., Odinaacida* | anti-malarial, Antipyretic | | |
| Joshanda | *Glycyrrhizaglabra, Onosmabracteatum, Onosmabracteatum* | Anti-bacterial,common cold | In-vitro | 35 |
| KOB03 | *Saposhnikoviae Radix, Scutellariae, Scutellariae, Osterici Radix, RhizomaAlba,* | Anti-allergic | In-vivo | 32 |
| DHU001 | *Schisandra chinensis, Platycodon, uralensis Fisch. MenthaarvensisLinnevarpipera scens, Ficus carica Linn, grandiflorum Jacq, Baill.,Glycyrrhiza, ZingiberofficinaleRoscoe.,* | contactdermatitis | In-vivo | 33 |
| Ovoutoline | *Asparagusracemosus, Saracaindica, Holarrhenaantidysenterica, Symplocosracemosa, Valerianawalchii, Glycyrrhiza glabra, Tinospora cordifolia,* | post-menopausalsymptoms | In-vitro | 29 |
| Diabrid | *Trigonellagraeceium, Momordicacharantia, Eugenia Jambolana, Gymnemasylvestre* | Anti-diabetic | Clinical trialPhase-1 | 22 |
| MajoonSuranjan | *Zingiberofficinalis, Colchicum luteum, Pipernigrum, Rosa damascus, Pyrethrum indicum, Verbascumthapus, Foeniculum vulgare, Terminalia chebula, Apiumgraveolens, Convulvulus scammony, Cassiaangustifolia, Coriandrumsativum, Origanum vulgare, Plumbago zelanicum, Ricinuscommunisoil, Ipomoeaturpethum,* | Antiarthriticactivity | In-vivo | 14,24 |
| Zyflamend | *Rosmarinusofficinalis, Berberisvulgaris, Scutellariabaicalensis, Ocimumsanctum, Zingiber officinale, Polygonum cuspidatum, Camellia sinensis, Coptischinensis, Curcumalonga, Origanum vulgar* | Prostate cancer | In-vitro | 27 |

| | | | | |
|---|---|---|---|---|
| Entoban | *Buteafrondosa, Quecrusinfectoria, Aegle marmelos, Holarrhenaantidysenterica, Berberis aristata, Myrtuscommunis* | Anti-oxidant | In-vitro | 36 |
| TongkatAli | *Cistanchedeserticola, Eurycoma longifolia Jack.,* | Increase Sexualstamina | In-vivo | 42 |
| EMSAeritin | *Redrice, Glycinemax, Cocosnucifera* | Stimultaion oferythropoiesis | In-vivo | 45 |
| Nefang | *CaricapapayaL, Citrus sinensis, Mangifera indica, Cymbopogon citratus, Ocimumgratissimum, Psidium guajava* | Anti-malarial | In-vivo | 47 |
| Prasaranisandhan | *Piper longum L., Plumbago zeylanica L., Paederiafoetida L, Zingiber officinale, PiperchabaHunter., Alliumsativum L* | Immunomodulatory | In-vivo | 48 |
| Wu-Zi-Yan-Zong | *Lyciumbarbarum L., Plantago asiatica L., RubuschingiiHu., Cuscuta chinensis Lam, Schizandrachinensis(Turcz.)Baill* | neuroinflammatory disease | In-vivo | 37 |
| Ben-Cha-Lo-Ka-Wi-Chian | --------- | Anti-pyretic andantinociceptive | In-vivo | 39,40 |
| PasakBumi | *CurcumalongaL. Eurycomalongifolia.,* | Increase passion inwomen. | Notfound | 43,44 |
| Wandererplus, | *Gardenia jasminoides, Bupleurumchinense, Mentha haplocalyx, Atractylodesmacroephala, Paeonia lactiflora, Zingiber officinale, Anglicasinensis, ,poriacocos fungus, Paeonia suffruticosa, Glycyrrhizauralensis* | Depressivedisorder | In-vivo | 46 |
| AVS022 | *F.racemose, T.triandra, H.perforate, C.indicum, C.micracantha* | Anti-oxidant | In-vitro | 41 |
| IBS-20 | *20-herbChinesemedicinalformula* | Anti-inflammatory | In-vivo | 38 |

**Table 3:**Paper published on polyherbal formulation in different countries.

| **Countries** |
|---|
| Bangladesh |
| China |
| Cameroon |
| Canada |
| Indonesia |
| Ghana |
| Pakistan |
| Malaysia |
| Nigeria |
| SouthAfrica |
| Tanzania |
| Spain |
| SriLanka |
| Iran |
| TheUnitedStateofAmerica |
| Thailand |
| India |
| South Korea |
| China |

Table 4: List of number of publications on polyherbal formulation, evaluated in treatment of different diseases in year 2019

| **Sr. No.** | **Diseases treatment** | **No. of publications** |
|---|---|---|
| 1 | Antidiarrheal | 4 |
| 2 | Anemia | 4 |
| 3 | Anti-inflammatory | 7 |
| 4 | Anti-malarial | 5 |
| 5 | Abortifacient activity | 2 |
| 6 | post-menopausal symptoms | 2 |
| 7 | Anti-spasmotic | 3 |
| 8 | Immunomodulatory activity | 2 |
| 9 | Osteoporosis | 3 |
| 10 | Analgesic | 3 |
| 11 | Anthelmintic | 4 |
| 12 | Anti-asthmatic | 3 |
| 13 | Antiurolithiatic Activity | 4 |
| 14 | Diabetes | 14 |
| 15 | Anti-allergic | 2 |
| 16 | Arthritis | 10 |
| 17 | Anti-malarial | 4 |

| | | |
|---|---|---|
| 18 | Hepatoprotective | 7 |
| 19 | Anxiety disorder | 5 |
| 20 | Anti-cancer | 3 |
| 21 | Anti-Oxidant | 8 |
| 22 | Wound | 2 |
| 23 | Anti-microbial | 3 |

**Discussion:**

From getting triggered by ancient medications of herbal medicine, scientist of current trend trying to make herbal formulation based on ancient herbal formula such as Ayurveda who is one of ancient health care system [57]. It is started from decades of 500 BC. Mahwangyounpae-tang is Korian medicine consist of 66 popular herbal medicines and also claimed to treat respiratory disorders by its 23 types of herbal extract [65]. A family from southern region of Nigeria has developed about 68 African herbal formula which consist of a unique combination of plant materials and this formula had passed to generation [68]. After many year African Herbal Formula were applied to cure the diseases and specially for middle level peoples or poor people so that it become famous in low socio-economic family [69]. Haya peoples of western Tanzania region of Kagera, are followed their culture to use medicine as herbal medicine as traditional medicine and Lack Victoria basin of ethonic tributes exchange herbal medicines. Among the huge population of India and Pakistan, traditional system of Unani medicines arepeacticed, It originated in Greece, founded by old ancient Greek philosophers, and was docu- mented 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:**

Polyherbal formulations shows it is preferable choice of treatment in comparison with synthetic one. Although, polyherbal formulation have very less scientific evidence to prove its clinical mechanism in the body. Herbal formulation is much more believable for no or less side effect due to its tradition use from ancient. Many herbal formulations reported to treat as effective medicine in various diseases. But still there is need to do work on its clinical trial along with its scientific evidence of its betterment in comparison of synthetic medicines.In this review article, we have seen the use of polyherbal formulation as medicine all over the world. Many of countries preferring only the herbal approach in treatment of diseases. Although it is need to evaluate properly poyherbal formulations along with its clinical manifestation and mechanism of action for world's future.

**References**

1. Teschke R, Wolff A, Frenzel C, Schulze J. Review article: Herbal hepatotoxicity- An update on traditional Chinese medicine preparations. Aliment. Pharmacol. Ther. 2014;40(1):32–50.
2. Basnyat S, Kolasinski SL. Ayurvedic medicine for rheumatoid arthritis. Curr. Rheumatol.

Rep. 2014;16(8).
3. TuhinKanti BiswasSPandSC.TestonIndianandPeruvianmedicinalplantsforwoundhealing.In:MukherjeePHandPK,editor.EvaluationofHerbalMedicinalProducts.PharmaceuticalPress.2009.page228–41.
4. Hussain SA, Panjagari NR, Singh RRB, Patil GR. Potential herbs and herbalnutraceuticals: food applications and their interactions with food components.CritRevFoodSciNutr.2015;55(1):94–122.
5. KunwarRM,ShresthaKP,BussmannRW.Traditionalherbalmedicineinfar-westNepal:apharmacologicalappraisal.JEthnobiolEthnomed.2010;6:35.
6. Leonti M, Casu L. Traditional medicines and globalization: Current and futureperspectivesinethnopharmacology.FrontPharmacol.2013;4JUL.
7. Ngo LT, Okogun JI, Folk WR. 21st century natural product research and drugdevelopmentandtraditionalmedicines.NatProdRep.2014;30(4):584–92.
8. CheCT,WangZJ,ChowMSS,LamCWK.Herb-herbcombinationfortherapeuticenhancement and advancement: Theory, practice and future perspectives.Molecules.2013;18(5):5125–41.
9. RisbergK,FodstadØ, Andersson Y.Synergisticanticancereffectsofthe9.2.27PEimmunotoxinandABT-737inmelanoma.PLoSOne.2011;6(9).
10. Ramaiah M, Chakravathi G, Yasaswini K. In vitro biological standardization,formulation and evaluation of directly compressed polyherbal anthelmintic tab-lets. Pharmacogn J [Internet]. 2013;5(3):130–4. Available from: http://dx.doi.org/10.1016/j.phcgj.2013.04.004
11. Kajaria DK, Gangwar M, Sharma AK, Nath G, Bhusan Y. Comparative Evalua-tionofPhenolAndFlavonoidContentofPolyherbalDrugs.Pharmacologyonline.2011;3:1365–73.
12. GeorgeSK,RajeshR,KumarS.S,SulekhaB,BalaramP.Apolyherbalayurvedicdrug-IndukanthaGhrithaasanadjuvanttocancerchemotherapyviaimmuno-modulation.Immunobiology.2008;213(8):641–9.
13. Ajazuddin, Saraf S. Evaluation of physicochemical and phytochemical proper-ties of Safoof-E-Sana, a Unani polyherbal formulation. Pharmacognosy. Res2010;2(5):318–22.
14. Singh S, Nair V, Gupta YK. Antiarthritic activity of majoonsuranjan (a polyherbalunaniformulation)inrat.IndianJMedRes.2011;134(9):384–8.
15. Krishnan PR. In Vitro wound healing effects of single and combined Africanherbal medicines. [Internet]. 2005 [cited 2015 Jun 28];Available from: http://etheses.dur.ac.uk/2761/1/2761_838.pdf
16. JainD,PatelR,PancholiS.Synergisticantioxidantactivityofgreenteawithsomeherbs.JAdvPharmTechnolRes.2011;2(3):177.
17. Gauttam VK, Kalia AN. Development of polyherbal antidiabetic formulationencapsulated in the phospholipids vesicle system. J Adv Pharm Technol Res.2013;4(2):108–17.
18. ViswanathanV,KesavanR,KavithaKV.,KumpatlaS.Apilotstudyontheeffectsof a polyherbal formulation cream on diabetic foot ulcers. Indian J Med Res.2011;134(8):168–73.
19. Mandlik R V., Desai SK, Naik SR, Sharma G, Kohli RK. Antidiabetic activity of apolyherbalformulation(DRF/AY/5001).IndianJExpBiol2008;46(8):599–606.
20. Tripathi YB, Singh BK, Pandey RS, Kumar M. BHUx: A patent polyherbalformulation to prevent atherosclerosis. Evidence-based Complement AlternMed.2005;2(2):217–21.
21. Satheesh Madhav N V., Upadhyaya K, Bisht A. Phytochemical screening

andstandardization of polyherbal formulation for dyslipidemia. Int J Pharm PharmSci.2011;3(SUPPL.3):235–8.

22. QadriNM,Zakir-ur-Rehman,RizviHA.EvaluationofHerbalDrugforHypoglyce-mic Activity in Normal, Hyperglycemic and Alloxan-Induced Diabetic Rabbits.PakistanJChem.2011;1(1):32–7.
23. Devaraj VC, Krishna BG, Viswanatha GL, Kamath J V., Kumar S. Hepatopro-tective activity of Hepax-A polyherbal formulation. Asian Pac J Trop Biomed.2011;1(2):142–6.
24. SubramaneyaanM,YasmeenS,AhmedRS,AroraVK,TripathiAK,BanerjeeBD.Evaluation of therapeutic efficacy of MajoonSuranjan, a Unani formulation, inthe treatment of rheumatoid arthritis: an experimental study. Exp Biol Med(Maywood).2013;238(12):1379–87.
25. JoglekarNS,JoshiSN,NavlakhaSN,KattiUR,MehendaleSM.AcceptabilityofPraneempolyherbalvaginaltabletamongHIVuninfectedwomen&theirmalepartnersinPuneIndia-PhaseIstudy.IndianJMedRes.2006;123(4):547–52.
26. JoglekarNS,JoshiSN,DeshpandeSS,ParkheAN,KattiUR,MehendaleSM.Ac-ceptabilityandadherence:findingsfromaPhaseIIstudyofacandidatevaginalmicrobicide,‘‘Praneempolyherbaltablet’’,inPune,India.TransRSocTropMed Hyg.2010;104(6):412–5.
27. Huang E-C, Chen G, Baek SJ, McEntee MF, Collier JJ, Minkin S, et al. Zyfla-mend Reduces the Expression of Androgen Receptor in a Model of Castrate-ResistantProstateCancer.Nutr.Cancer.2011;63(8):1287–96.
28. Divya Ravindran, Indhu Hariharan, Richard Muwonge, Rejnish R. Kumar MRPandKR.EfficacyofVarunadiGhritha(polyherbalcompound)intreatedheadandneckcancercasesasabiologicalresponsemodifier.Ayu.2014;35(2):168–74.
29. DuttaguptaDS,RukhsarM,WastaI,MilindV.*In-vitro*antioxidantactivityofapolyherbal menopausal formulation :ovoutoline tablet. World J Pharm PharmSci.2015;4(05):1001–8.
30. Edorh MS, Agbere S, Osei-Safo D, Adam Z, Agbonon A, Karou DS, et al.Toxicological screening of Daouri, a polyherbal formulation used in children intheCentralRegionofTogo.JEthnopharmacol[Internet]2015;164:30–4.Availablefrom:http://linkinghub.elsevier.com/retrieve/pii/S0378874115000604
31. Adeyemi OS, Fambegbe M, Daniyan OR, Nwajei I. Yoyo Bitters, a polyherbalformulationinfluencedsomebiochemicalparametersinWistarrats.JBasicClinPhysiolPharmacol[Internet]2012[cited2015Dec19];23(4):135–8.Availablefrom:http://www.degruyter.com/view/j/jbcpp.2012.23.issue-4/jb-cpp-2012-0026/jbcpp-2012-0026.xml
32. Won Jung H, Jung J-K, Weon Cho C, Kang J-S, Park Y-K. Antiallergic effect ofKOB03, a polyherbal medicine, on mast cell-mediated allergic responses inovalbumin-induced allergic rhinitis mouse and human mast cells. J Ethnophar-macol[Internet]2012[cited2015Dec2];142(3):684–93.Availablefrom:http://www.sciencedirect.com/science/article/pii/S0378874112003492
33. Lee H-S, Lee B-C, Ku S-K. Effect of DHU001, a Polyherbal Formula, on Dinitro-fluorobenzene-induced Contact Dermatitis (Type I allergy). Toxicol Res [Internet]2010 [cited 2015 Dec 19];26(2):123–30. Available from: http://www.pubmedcen-tral.nih.gov/articlerender.fcgi?artid=3834469&tool=pmcentrez&rendertype=abstract
34. Ogbonnia SO, Mbaka GO, Adekunle a, Anyika EN, Gbolade OE, Campus M.Effectofapoly-herbalformulation,Okudiabet,onalloxan-inducceddiabeticratsNwakakwaNDepartmentofPharmacognosy,FacultyofPharmacy,Collegeof Medicine Campus , Idi- Department of Clinical Pharmacy and Biopharmacy ,FacultyofPharmacy,Co.2010;

35. Azmi AA,JamaliS,MuradR,Zaidi AH. Antibacterial ActivityofJoshanda :aPolyherbalTherapeuticAgentUsedinCommonCold.2010;27(1):25–8.
36. Kajaria DK, Gangwar M, Sharma AK, Tripathi YB, Tripathi JS, Tiwari S. Evaluationof in vitro antioxidant capacity and reducing potential of polyherbal drug- Bharangyadi.AncSciLife[Internet]2012;32(1):24–8.Availablefrom:http://www.ancientscienceoflife.org/article.asp?issn=0257-7941;year=2012;volume=32;issue=1;spage=24;epage=28;aulast=Kajaria
37. Zeng K-W, Zhang T, Fu H, Liu G-X, Wang X-M. Modified Wu-Zi-Yan-Zongprescription, a traditional Chinese polyherbal formula, suppresses lipopolysac-charide-induced neuroinflammatory processes in rat astrocytes via NF-□ B andJNK/p38MAPKsignalingpathways.Phytomedicine[Internet]2012;19(2):122–9.Availablefrom:http://www.ncbi.nlm.nih.gov/pubmed/21893401
38. YangZ,GrinchukV,IpSP, CheC-T,FongHHS, LaoL,et al.Anti-InflammatoryActivities of a Chinese Herbal Formula IBS-20 *In Vitro* and *In Vivo*. Evidence-Based Complement Altern Med [Internet] 2012;2012:1–12. Available from:http://www.hindawi.com/journals/ecam/2012/491496/
39. SingharachaiC,PalanuvejC,KiyoharaH,YamadaH,RuangrungsiN.Pharmacog-nostic Specification of Five Root Species in Thai Traditional Medicine Remedy:Ben-Cha-Lo-Ka-Wi-Chian. Pharmacogn J [Internet] 2011;3(21):01–11. Availablefrom:http://dx.doi.org/10.5530/pj.2011.21.1
40. Jongchanapong A, Singharachai C, Palanuvej C, Ruangrungsi N, Towiwat P.Antipyretic and Antinociceptive Effects of Ben-Cha-Lo-Ka-Wi-Chian Remedy.2010;24(1):15–22.
41. Pluemsamran T, Tripatara P, PhadungrakwittayaR, Akarasereenont P, Laohapand T,PanichU.RedoxMechanismsofAVS022,anOrientalPolyherbalFormula,and Its Component Herbs in Protection against Induction of Matrix Metallopro-teinase-1inUVA-IrradiatedKeratinocyteHaCaTCells.2013;2013.
42. Talbott SM, Talbott JA, George A, Pugh M. Effect of Tongkat Ali on stresshormones and psychological mood state in moderately stressed subjects. J IntSoc Sports Nutr [Internet] 2013 [cited 2015 Dec 20];10(1):28. Available from:http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=3669033&tool=pmcentrez&rendertype=abstract
43. BhatR,KarimAA.TongkatAli(EurycomalongifoliaJack):areviewonitsethno-botany and pharmacological importance. Fitoterapia [Internet] 2010 [cited 2015Dec 25];81(7):669–79. Available from: http://www.sciencedirect.com/science/article/pii/S0367326X10000845
44. MohdFuata.R,AidooKE,CalvertTW,Candlisha.a.G.Mycoflora,Cytotoxicity,and DNA Interaction of Polyherbal Products from Malaysia. Pharm Biol [Inter-net]2006;44(1):23–31.Availablefrom:http://www.scopus.com/inward/record.url?eid=2-s2.0-33644979761&partnerID=tZOtx3y1
45. Ibrahim M, Widjajanto E, Aris Widodo M, Sumitro SB. Adequate stimulation ofhematopoietic stem cell proliferation by a polyherbal formulation (EMSA eritin) leading to lymphocyte differentiation in BALB/c mice after radiation. Biomarkers Genomic Med [Internet] 2015;7(3):110–5. Available from: http://linkinghub.elsevier.com/retrieve/pii/S2214024715000386
46. F. Q, X.-a. W, Y. T, Q. H, Z.-J. Z, J.-H. Y. Meta-analysis of randomized controlled trials to assess the effectiveness and safety of free and easy Wanderer plus, a polyherbal preparation for depressive disorders. J Psychiatr Res [Inter- net] 2011;45(11):1518–24. Available from: http://www.embase.com/search/

results?subaction=viewrecord&from=export&id=L51558795\nhttp://dx.doi.org/10.1016/j.jpsychires.2011.06.018

47. ArreyTarkang P, Franzoi KD, Lee S, Lee E, Vivarelli D, Freitas-Junior L, et al. In vitro antiplasmodial activities and synergistic combinations of differential solvent extracts of the polyherbal product, Nefang. Biomed Res Int [Internet] 2014 [cited 2015 Dec 21];2014:835013. Available from: http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=4022163&tool=pmcentrez&rendertype=abstract
48. Sarker MR, Imam H, Bhuiyan MS, Kabir MS. In vitro assessment of prasaranisandhan , a traditional polyherbal ayurvedic medicine , for immunostimulating activity in splenic cells of balb/c mice. 2014;6(9).
49. Mistry S, Dutt KR, Jena J. Formulation and evaluation of hepatoprotective poly- herbal formulation containing indigenous medicinal plants. Int J PharmTech Res. 2012;4(3):1238–41.
50. Devaraj VC, Krishna BG. Antiulcer activity of a polyherbal formulation (PHF) from Indian medicinal plants. Chin J Nat Med [Internet] 2013;11(2):145–8. Available from: http://dx.doi.org/10.1016/S1875-5364(13)60041-2
51. Ilodigwe E. Evaluation of the Wound Healing Activity of a Polyherbal Remedy. Ann … [Internet] 2012;3(11):5393–8. Available from: http://scholarsresearchli- brary.com/ABR-vol3-iss11/ABR-2012-3-11-5393-5398.pdf
52. Patel N a, Patel M, Patel RP. Formulation and Evaluation of Polyherbal Gel for Wound Healing. 2011;01(01):1–6.
53. Krishnaiah D, Hiaw KB, Sarbatly R, Anisuzzaman SM, Nithyanandam R. Spray Drying of MorindaCitrifolia L. and Beta Vulgaris L. Fruit Extract and Its Synergistic Effect. Int J Chem Eng Appl [Internet] 2012;3(6). Available from: http://www. ijcea.org/show-41-477-1.html
54. Haule EE, Moshi MJ, Nondo RSO, Mwangomo DT, Mahunnah RLA. A study of antimicrobial activity, acute toxicity and cytoprotective effect of a polyherbal extract in a rat ethanol-HCl gastric ulcer model. BMC Res Notes [Internet] 2012 [cited 2015 Dec 19];5(1):546. Available from: http://bmcresnotes.biomedcentral.com/articles/10.1186/1756-0500-5-546
55. Suliman S, Van Vuuren SF, Viljoen a. M. Validating the in vitro antimicrobial activity of Artemisia afra in polyherbal combinations to treat respiratory infections. South African J Bot [Internet] 2010;76(4):655–61. Available from: http://dx.doi.org/10.1016/j.sajb.2010.07.003
56. Paddy V, Tonder J, Steenkamp V. In vitro Antidiabetic Activity of a Poly- herbal Tea and Its Individual Ingredients. Br J Pharm Res [Internet] 2015; 6(6):389–401. Available from: http://www.sciencedomain.org/abstract.php?iid= 987&id=14&aid=9126
57. Gaspar A, Savin S, Toma A. Phenolic content , antioxidant activity and ef- fect on collagen synthesis of a traditional wound healing polyherbal formula. 2015;25(1):41–6.
58. Ghorbani A, Shafiee-Nick R, Rakhshandeh H, Borji A. Antihyperlipidemic effect of a polyherbal mixture in streptozotocin-induced diabetic rats. J Lipids [Inter- net] 2013;2013:675759. Available from: clerender.fcgi?artid=3870091&tool=pmcentrez&rendertype=abstract
59. Fahimi S, Abdollahi M, Mortazavi SA, Hajimehdipoor H, Abdolghaffari AH, Rezvanfar MA. Wound Healing Activity of a Traditionally Used Poly Herbal Product in a Burn Wound Model in Rats. Iran Red Crescent Med J [Internet] 2015;17(9). Available from: http://www.ircmj.com/?page=article&article_id=19960

60. Madkour F, Hassan M. Wound Healing Activity of Brown Algae plus Polyherbal Extract in Normal and Alloxan-induced Diabetic Rats. J Adv … [Internet] 2013;3:102–8. Available from: http://advetresearch.com/index.php/avr/article/ view/223
61. Galhena PB, Samarakoon SR, Thabrew MI, Weerasinghe G a K, Thammitiya- godage MG, Ratnasooriya WD, et al. Anti-Inflammatory Activity Is a Possible Mechanism by Which the Polyherbal Formulation Comprised of Nigella sativa (Seeds), Hemidesmus indicus (Root), and Smilax glabra (Rhizome) Mediates Its AntihepatocarcinogenicEffects. Evid Based Complement Alternat Med [Internet] 2012;2012:108626. Available from: http://www.pubmedcentral.nih. gov/articlerender.fcgi?artid=3517268&tool=pmcentrez&rendertype=abstract
62. Koffuor G a, Woode E, Mensah AY. Neurobehavioral and safety evaluation of a polyherbal antihypertensive mixture in Ghana. Eur J Exp Biol 2011;1(3):20–30.
63. Publications MJ, Dickson R a, Thomford KP, Annan K, Aa A. Quality and safety evaluation of a Ghanaian polyherbal product EAF-2011 for the management of superficial mycoses. 2013;2(2):91–102.
64. Aziz N, Mehmood MH, Gilani A-H. Studies on two polyherbal formulations (ZPTO and ZTO) for comparison of their antidyslipidemic, antihypertensive and endothelial modulating activities. BMC Complement Altern Med [Internet] 2013 [cited 2015 Dec 24];13(1):371. Available from: http://www.biomedcentral. com/1472-6882/13/371
65. Sayeed SR, Ahmed H, Rahman S, Ahmad I. Polyherbal formulation for lowering blood glucose levels : evaluation of a combination of foeniculum vulgare and brassica alba seeds. 2015;4(10):79–85.
66. Mukherjee PK, Wahile A. Integrated approaches towards drug development from Ayurveda and other Indian system of medicines. J Ethnopharmacol [Inter- net] 2006 [cited 2015 Aug 25];103(1):25–35. Available from: http://www.scien-cedirect.com/science/article/pii/S0378874105006525
67. Park M-Y, Choi H-Y, Kim J-D, Lee H-S, Ku S-K. 28 Days repeated oral dose toxicity test of aqueous extracts of mahwangyounpae-tang, a polyherbal formula. Food Chem Toxicol [Internet] 2010;48(8–9):2477–82. Available from: http://www.sci-encedirect.com/science/article/pii/S0278691510003911
68. Okochi V, Okpuzor J. The influence of African Herbal Formula on the haema- tological parameters of trypanosome infected rats. African J … [Internet] 2004;2(September):312–6. Available from: http://www.ajol.info/index.php/ajb/ article/view/14843
69. Moshi MJ, Otieno DF, Mbabazi PK, Weisheit A. Ethnomedicine of the Kagera Region, north western Tanzania. Part 2: The medicinal plants used in Katoro Ward, Bukoba District. J EthnobiolEthnomed [Internet] 2010 [cited 2015 Dec 25];6:19. Available from: http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=3224970&tool=pmcentrez&rendertype=abstract
70. Qureshi RA, Ghufran MA, Gilani SA, Yousaf Z, Abbas G, Batool A. Indigenous medicinal plants used by local women in southern Himalayan regions of Pakistan. Pakistan J Bot. 2009;41(1):19–25.