Review Article

INTERNATIONAL JOURNAL of Indigenous Herbs and Drugs
ISSN 2456-7345

AN UPDATED REVIEV ON SCENARIO OF HERBAL DRUGS AND FORMULATIONS IN THE UPLIFTMENT OF INDIAN PHARMACEUTICAL INDUSTRY

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Article History:

Received on: 10-07-2019
Revised on : 19-10-2029
Accepted on : 25-10-2019

Keywords:

Herbal medicine, Indian economy, ayurvedic medicines, pharmaceutical industries.

Abstract

India is a large country with diverse geoclimaticbio diversity. There are so many herbs in India that are really useful to herbal drugs currently using in the Indian pharmaceutical industry also. Indian population using herbal medicines from early thousands of centuries, with their cultural acceptance, safety, lesser side effects, and efficacy, nowadays based on therapeutic effects 50 categories of the drug have been described as laxatives, anti-diarrhea, anti-hemorrhoid, appetizers, digestive stimulants, anti-emetic, anti-pyretic, anti-inflammatory, anti-pruritic, anti-asthmatic, anti-epileptic, anti-helminthic, analgesics, sedatives, promoter of strength, complexion, voice, semen and sperm, breast milk secretion, fracture and wound healing, destroy of kidney stones, etc. the ayurvedic herbs such as tulsi, cinnamon, black pepper, dry ginger, and raisins and regular yoga are potent aids to increase the body's immunity against harmful viruses. So the Indian government has taken numerous actions to develop herbal drugs. The number of Indian pharmaceutical companies has going through herbal drugs and formulation.

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INTRODUCTION

Herbal medicine system has primarily practiced in India has been known from early 5000 years. India has a rich tradition of herbal medicine, which has recorded from Ayurveda. The first and most famous treaties of Ayurveda are Charakasamhita and Sushrutasamhita [5]. Herbal products dominated in India as Materiamedica which made extensive use of flower, fruit, leaves, bark, root, tubers, and juices.

80%of the people in India still rely on a traditional system of medicine based onherbal drugs. Most of the Indian population use herbal drugs regularly as spices, home remedies, health foods as well as over the counter (OTC) as self medication or also drugs prescribed in allopathic treatments [7]. Herbal formulations means "a dosage form consisting of one or more herbs in specified quantities to provide specific nutritional, cosmetic benefits meant for use to diagnose treat, migrate disease of human beings or animals and/or to alter the structure or physiology of human beings or animals. Herbal medicinal products are any medicinal products exclusively containing as active substances that is

one or more herbal substances with one or more herbal preparations [8].

HERBAL DRUG FORMULATIONS

Herbalpreparations are obtained by subjecting herbal substances such as extraction, distillation, expression, fractionation, concentration or fermentation. These include comminuted or powdered herbal substances, tinctures, extracts, essential oils, expressed juices and processed exudates.Herbal substances are precisely defined by the plant part used and the botanical name according to the binomial system (genus, species, variety and author). All mainly whole, fragmented or cut plants, plants parts, algae, fungi, lichen in an unprocessed, usually dried form but sometimes fresh[10]. The term markers is used in herbal drug formulations, this can be defined constituents or groups of constituents of herbal substance, a herbal medicinal product which are of interest for control purpose independent of whether they have any therapeutic activity. Markers serve to calculate the quantity of herbal substances and herbal preparations in herbal medicinal product if the marker has been quantitatively determined in the herbal substance or herbal preparations. There are two types of markers a) Active marker: are constituents or group of constituents which are generally accepted to contribute to the therapeutic activity. b) Analytical marker: are constituents or group of constituents that serve for analytical purpose [12].

CHARACTERIZATION OF HERBAL DRUGS [5]

- Design and development consideration
- Pharmacopoeia tests and acceptance criteria
- Periodic/skip testing
- Release versus shelf-life acceptance criteria
- In-process tests
- Alternative procedures
- Evolving technologies
- Reference standard
- Statistical concepts

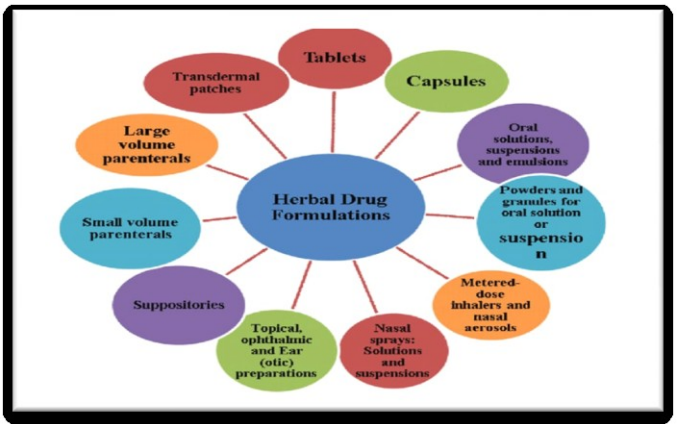

Figure 01: Herbal drug formulations [1,2]

CURRENT STATUS OF HERBAL DRUGS AND FORMULATIONS IN INDIA

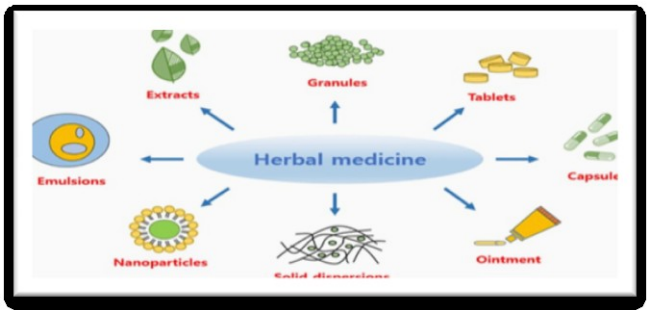

Figure 0:. Representing the different types of formulations of Herbal Medicines [4].

Table 01: Representing the complete information regarding herbal drug formulations [5,6]

RAW HERBS	HERBAL EXTRACTS	FORMULATIONS
1. Acacia 2. Ajwain 3. Amalaki 4. Amaltas 5. Amra 6. Anantmula 7. Arjuna 8. Artemisia 9. Ashwagandha 10. Asoka 11. Asthisamhrta 12. Bakuci 13. Bala 14. Bassant 15. Belladona leaf 16. Bhibhitaki 17. Bhringraj 18. Bhuiamla 19. Birmi 20. Brahmi 21. Coleus 22. Daruharidra roots 23. Daruharidra stems 24. Draksha 25. Ergot 26. Garcinia 27. Ginkgo leaf 28. Ginseng 29. Gokhru 30. Gudmar 31. Guduchi 32. Guggul resin 33. Haridra 34. Haritaki 35. Hingu 36. Ispaghula husk 37. Ivy leaf 38. Janglihaldi 39. Jatamansi 40. Kalmegh 41. Kasni 42. Kaunch 43. Kunduru 44. Kutki 45. Lasuna 46. Lavang 47. Lodhra 48. Mandukaparni	1. Amla juice powder 2. Arjuna dry extract 3. Ashwagandha dry extract 4. Bassant dry extract 5. Belladonna dry extract 6. Belladonna soft extract 7. Bhibhitaki aqueous extract 8. Bhuiamla dry extract 9. Brahmi extract 10. Coleus dry extract 11. Garcinia aqueous extract 12. Ginkgo dry extract 13. Ginseng dry extract 14. Gudmar dry extract 15. Gugulipid 16. Haridra dry extract 17. Haritaki aqueous extract 18. Haritaki extract 19. Ivy leaf dry extract 20. Kalmegh dry extract 21. Kunduru dry extract 22. Malt extract 23.Mandukaparanidry extract 24. Opium 25. Senna dry extract 26. Sunthi extract 27. Tulasi dry extract 28. Valerian dry extract 29. Vasaka extract 30. Yasti dry extract	1. Amla juice 2.Basil oil (Methyl Chavicol type) 3. Belladonna Tincture 4. Black pepper oil 5. Caraway oil 6. Cardamom oil 7. Cassia oil 8. Castor oil 9. Cinnamon Bark oil 10. Cinnamon leaf oil 11. Clove bud oil 12. Clove leaf oil 13. Clove stem oil 14. Coconut oil 15. Coriander oil 16. Cumin oil 17. Dill seed oil 18. Eucalyptus oil 19. Ginkgo tablet 20. Guar gum 21. Gugulipid tablets 22. Hydrogenated castoroil 23. Ipecac Tincture 24. Lavender oil 25. Lemon grass oil 26. Lemon oil 27. Lime oil 28. Mentha oil 29. Menthaarvensis oil 30. Nutmeg oil 31. Opium powder 32. Papain 33. Peppermint oil 34. Prepared ergot 35. Rosemary oil 36. Sarpagandha powder 37. Sarpagandha tablets 38. Senna tablets 39. Shellac 40. Starch 41. Tea tree oil 42. Thyme oil 43. Tolu balsam 44. Tragacanth

49. Manjistha 50. Maricha 51. Methi 52. Mirch 53. Nagakesar 54. Neem 55. Nirgundi 56. Noni 57. Pippali large 58. Pippali small 59. Punarnava 60. Puskara 61. Sahajana leaf 62. Sahajana stick 63. Sarpagandha 64. Saunf 65. Senna leaf 66. Senna pods 67. Shankhpushpi 68. Shatavari 69. Shati 70. Sunthi 71. Tulasi 72. Valerian root 73. Vasaka 74. Vidanga 75. Vijayasara 76. Yasti		

CURRENT SCENARIO OF PHARMACEUTICAL INDUSTRIES IN INDIA

The Indian pharmaceutical industries came into existence in 1901. Bengal chemical and pharmaceutical company started its initial operation in Calcutta, after that the developing with several stages largely in accordance with government policies. The world's largest industry is pharmaceutical industry due to worldwide revenues amounted to over 1,310.0 billion rupees and USD55billion equal to 41580000000.0indian rupees. Top Indian pharmaceutical industries like Ran Baxy, DRL, CIPLA, and Dabur have established their presence. The Indian pharmaceutical industry has become dawning of Indian economy [8].

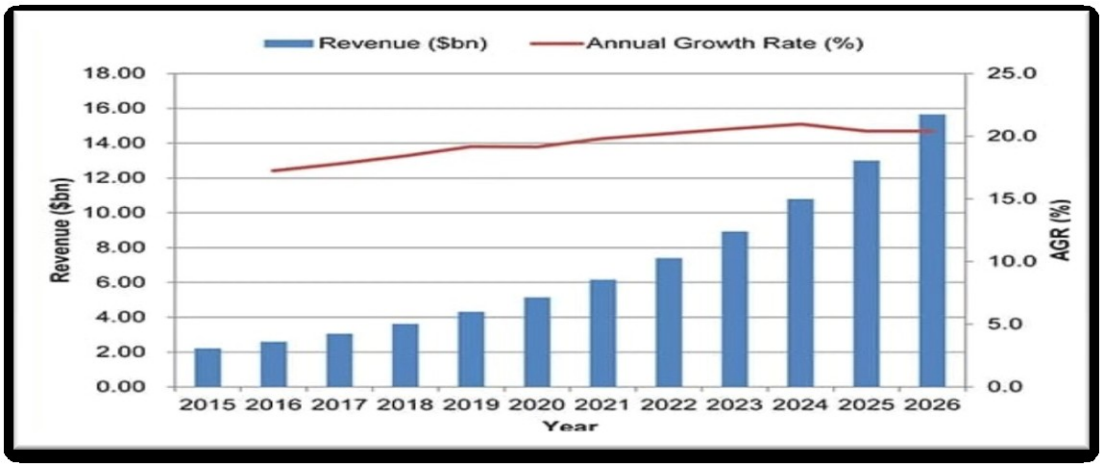

Figure 03: Representing the Graphical Representation of upliftment of Indian Pharmaceutical Industry (example of Cardiovascular Drugs Market) [7]

TO UPLIFT THE INDIAN HERBAL PHARMACEUTICAL INDUSTRY [8, 9]

- The central government has decided to commission a study on what needs to be done for boosting Indian systems of medicine.
- The idea is to help the herbal drug manufacturing industry and to raise its export revenue to the same high level as exist for allopathic medicines.
- The department of AYUSH in the union health ministry is set to commission a detailed study by a market research agency or consultant. It will assess demand and supply for medicinal plants in India and in international markets, update the data on cultivation of such plants, the land available and required, and the data on production.
- The national medicinal plant board is to oversee the project. It will then create a policy framework based on the data, to provide the needed infrastructure, incentives and other mechanisms. Later, the government might consider creating special economic zones to promote the sector.
- Companies such as Himalaya Zandu, Charak and Daburare likely to benefit; so herbal plants.
- The terms of reference will include evaluating various business and licensing models, as well as agreements between major companies and farmers of herbal plants.
- Incentivizing and facilitating production, an effective licensing system and proper data andmechanism will push up exports of herbal material and medicines.
- It is difficult to quantify the market for traditional Indian systems of medicines, as many practitioners formulate and dispense their own recipes. Even so annual turnover of products manufactured by large companies is estimated at around $300million a year. There appear to be about 250,000 registered medical practitioners of the ayurvedic system.
- India, after china, is the largest producer of medicinal plants. The top export destinations for Indian herbal medicines include America, Britain, Germany, Japan and Spain.
- In recent years, there has been a significant upsurge in the industrial demand for medicinal plant resources, due to worldwide buoyancy in the sector engaged in production of herbal health care formulations, herbal based cosmetic supplements.

Table 02: Representing the Herbal Research Institutes/Centers in India [6,7]

Name of the institute/center	Situated/place
1. CCRAS(central council for research in Ayurveda and siddha)	New Delhi
2. RRL(Regional research laboratory)	Jammu-Tawi
3. NBRI(National botanical research institute	Lucknow
4. Gujarat Ayurveda university	Jamnagar
5. Bhavan's SPARC	Mumbai
6. National institute of Ayurveda	Jaipur
7. ACARTS	Mumbai
8. Aryavaidyashala	Kottakal
9. Interdisciplinary school of health sciences	Pune
10. Banaras Hindu university	Vanarasi
11. CIMAP(Central institute for medicinal and aromatic plants)	Lucknow
12. ICMR(Indian council for medical and research)	New Delhi
13. National medicinal plants	New Delhi
14. Indian drug manufactures	Mumbai
15. Regional medical research Centre	Belgaum

16. PERD Centre (pharmaceutical education and research development)	Ahmadabad
17. CCRUM(Central council for research in Unani Medicine	New Delhi
18. NISCOM (National institute of science communication)	New Delhi
19. IMPCOPS (Indian medical Practioners co-operative pharmacy and stores ltd.)	Chennai
20. ADMA(Ayurvedic drug manufacturing association)	Mumbai
21. IASTAM(international association for the study of traditional Asian medicine)	Mumbai
22. FRHLT(foundation for revitalization of local health traditions)	Bangalore
23. Botanical survey of India	Kolkata
24. Podar hospital	Mumbai
25. BHU (Banaras Hindu university)	Varanasi
26. TBGRI(tropical botanical garden and research institute)	Thiruvantpuram
27. NCL (national chemical laboratory)	Pune
28. NPRC (Nicholas Piramal Research Centre)	Mumbai
29. NBPGR(National Bureau of plant genetic resources)	New Delhi
30. NIMHANS(National institute for mental health and neurosciences)	Bangalore

CONCLUSION

Herbal drugs have been used since early 5000 years. Indian population is still using ayurvedic medicines due to their less side effects and safety so the government of India permission accessed to pharmaceutical industries to formulate medicine from herbs. The demand of herbal drugs rising day by day due to their clinical effective actions, and the point if economy is beneficial from pharmaceutical industry. When compared to English medicine herbal medicine is more beneficial they do not provoke allergic reaction, side effects and they are easily available in large variety and quantity and also easy to manufacture chief in cost. To the effective action of herbal drugs they should be stored in cool and dry place and air tight container, do not stored in direct sunlight and moisture. Moisture can promote bacterial and fungal growth.

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