A REVIEW ON ORAL AYURVEDIC FORMULATIONS

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ABSTRACT
Ayurveda is one of the oldest medication tradition in the world, there are different formulations which are boon for the medical field, one of such formulation is decoction, dejection is one of the famous formulation in liquid oral dosage form in the field of Ayurveda, this eases the solubility of herbal drugs in carrier vehicle. There after it is easily administered as the liquid dosage form in the ayurveda. To prepare the oral liquid dosages form it is necessary to formulate the suspended particles for the carrier suspensions. Valuable formulation has been made with classical facts with logical facts, including evidences from Vedas, Samhitas, Medicinal books, Tribal colonies and different search engines on podium. This review article reflects history, properties, chemical constituents, pharmacological actions, toxicity, and different uses. This review would serve as the most important step to engender new approach of Ayurvedic drug research, a path to sense possible alterations in drug formulations and ultimately new drug discovery.

KEYWORDS: Arjuna, Ayurveda, Ayurvedic formulations, Terminalia arjuna.

INTRODUCTION
Ayurvedic classics treasures a rich repertory of medicinal plants used for the treatment, management and/or control of different types of diseases. Knowledge about the healing property of medicinal plants used in Ayurvedic therapeutics mentioned in classics is a result of astute clinical observations made over centuries.¹ Details about their properties and therapeutic applications are available in ancient scriptures like Vedas, Samhitas and Puranas. Compilations of later periods that are called Nighantus also contain enormous amount of information.²
The current global trend towards utilization of plant-derived natural remedies has, therefore, created a dire need for accurate and up to date information on the properties and uses, efficacy, safety and quality of medicinal plant products.\[^{[3]}\] Hence, the review of traditional medicinal plant and their formulations mentioned in Ayurvedic classics is crucial in present era. In *Rigveda*, the word ‘Arjuna’ is used either to indicate the white colour or one of taintless fame and glow like silver. It may be the first reference of *Arjuna* used as medicine stated in chief or principle sutra volume of *Atharvaveda, Kaushiksutra* (400-300 B.C.). Further synonyms and properties of *Arjuna* are mentioned in *Bhavprakash Nighantu*. Later on *Chakradatta*, the great ancient physician, recommended uses of *Arjuna* bark in form of decoction with milk (*Kshirpak* or a ghrita (a preparation with ghee)).\[^{[4]}\]

Due to the lack of detailed information at the same platform there was a need of presenting a detailed literature review in which all the information are present at one place. Extra effort was made to compile the details of *Arjuna* and its imperative formulations used in Ayurvedic System of Medicines. Since, detailed combined assessment on modern aspects as well as Ayurvedic classical preparations of different formulations of *Arjuna* along with scientific symposium were not available on one platform during extensive literature search hence it was thought worthwhile to undertake detailed review study. Immense effort was made to compile the details of *Arjuna* and its imperative formulations used in Ayurvedic System of Medicines.\[^{[5]}\]

Ayurveda comprises of various types of medicines including the fermented forms namely *arishtas* (fermented decoctions) and *asavas* (fermented infusions). These are regarded as valuable therapeutics due to their efficacy and desirable features.\[^{[6]}\]

Ayurvedic medicine as define in the drugs and cosmetic act 1940, includes all medicines intended for internal or external use, for or in the diagnosis, treatment, or prevention of diseases or disorders in human being or animal and manufactured in accordance with the formulae describe in the authoritative books of ayurvedic system of medicine specified in the first schedule of the act.\[^{[7]}\]

Arishtas are made with decoctions of herbs in boiling water while asavas are prepared by directly using fresh herbal juices. These are unique liquid dosage form that contains self generated alcohol. Arishtas are classical Ayurvedic preparations typically used as digestive and cardiotonic.\[^{[8]}\]
Arishta (fermented decoction) and Asava (fermented infusion) are considered as a unique and valuable therapeutics in ayurveda, due to their medicinal value, sweet taste and easy availability. Subjects preferentially consume higher dosage of these drugs for longer periods. The manufacturer and sell of arishtas and asavas occupies an important place in the ayurvedic pharmaceutical industry. We take the simple example of the different formulations for there methods of extraction and preparation.\(^9\)

**METHOD OF EXTRACTION**

Extraction (as the term is pharmaceutically used) is the separation of medicinally active portions of plant (and animal) tissues using selective solvents through standard procedures. Such extraction techniques separate the soluble plant metabolites and leave behind the insoluble cellular marc. The purposes of standardized extraction procedures for crude drugs are to attain the therapeutically desired portion and to eliminate the inert material by treatment with a selective solvent known as menstrum. The extract thus obtained may be ready for use as a medicinal agent in the form of tinctures and fluid extracts, it may be further processed to be incorporated in any dosage form such as tablets or capsules.\(^{10}\)

**Selection of extraction method**

Following are the steps of extraction used for the preparation of the formulation:

i) Authentication of plant material should be done before performing extraction. Any foreign matter should be completely eliminated.

ii) Use the right plant part and, for quality control purposes, record the age of plant and the time, season and place of collection.

iii) Conditions used for drying the plant material largely depend on the nature of its chemical constituents. Hot or cold blowing air flow for drying is generally preferred.\(^{11}\) If a crude drug with high moisture content is to be used for extraction, suitable weight corrections should be incorporated.

iv) Grinding methods should be specified and techniques that generate heat should be avoided as much as possible.

v) Powdered plant material should be passed through suitable sieves to get the required particles of uniform size.

vi) Nature of constituents: a) If the therapeutic value lies in non-polar constituents, a non-polar solvent may be used. For example, lupeol is the active constituent of *Crataeva nurvala* and, for its extraction, hexane is generally used. Likewise, for plants like *Bacopa*
monnieri and Centella asiatica, the active constituents are glycosides and hence a polar solvent like aqueous methanol may be used.

vii) If the constituents are thermo labile, extraction methods like cold maceration, percolation and CCE are preferred. For thermo stable constituents, Soxhlet extraction (if nonaqueous solvents are used) and decoction (if water is the menstrum) are useful.

viii) Suitable precautions should be taken when dealing with constituents that degrade while being kept in organic solvents, e.g: flavonoids and phenyl propanoids.\[12\]

ix) In case of hot extraction, higher than required temperature should be avoided. Some glycosides are likely to break upon continuous exposure to higher temperature.

x) Standardization of time of extraction is important, as: • Insufficient time means incomplete extraction. • If the extraction time is longer, unwanted constituents may also be extracted.\[13\] For example, if tea is boiled for too long, tannins are extracted which impart astringency to the final preparation.

xi) The number of extractions required for complete extraction is as important as the duration of each extraction.

xii) The quality of water or menstrum used should be specified and controlled.

xiii) Concentration and drying procedures should ensure the safety and stability of the active constituents. Drying under reduced pressure (e.g. using a Rotavapor) is widely used. Lyophilization, although expensive, is increasingly employed.

xiv) The design and material of fabrication of the extractor are also to be taken into consideration.

xv) Analytical parameters of the final extract, such as TLC and HPLC fingerprints, should be documented to monitor the quality of different batches of the extracts.\[14\]

**Solvents: following are the factors which are responsible for the selection of solvents for the commercial scale production.**

**Solvent power (selectivity):** Only the active, desired constituents should be extracted from the plant material, which means that a high selectivity is required.

• **Boiling temperature.** The boiling point of the solvent is as low as possible in order to facilitate removal of the solvent from the product.

• **Reactivity.** The solvent should not react chemically with the extract, nor should it readily decompose.

• **Viscosity.** A low viscosity of the solvent leads to low pressure drop and good heat and mass transfer.
• **Safety.** The solvent should be non-flammable and non-corrosive, and should not present a toxic hazard; its disposal should not imperil the environment.

• **Cost.** The solvent should be readily available at low cost.

• **Vapor pressure.** To prevent loss of solvent by evaporation, a low vapor pressure at operating temperature is required.

• **Recovery.** The solvent has to be separated easily from the extract to produce a solvent-free extract.\(^\text{[15]}\)

**Method of preparation\[^{[16]}\]**

One of the examples of the oral preparation is oral syrups. Here is the discussion of method of preparation of syrup is done.

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**Evaluation of Ayurvedic oral liquids.\[^{[19]}\]**

The different parameters of decoction and final Liquid Oral were assessed such as pH, specific gravity, density. Stability study of final Liquid Oral was carried out at different temperature relative humidity.
Evaluation of Suspension\textsuperscript{[20]}

The three forms of Suspension were evaluated for rate of sedimentation. Stability study of the final suspension was carried out. Along with this particle size, viscosity, pH, flow ability, clarity, sedimentation, flocculation, emulsion breakage, extractive value, volatile matter content, free fatty acid/acidity and peroxide value.

Role of oral liquid dosages form for the treatment of different diseases:

Diabetes\textsuperscript{[21]}

The invention provides a synergistic oral liquid herbal composition falling under the category of “Asavas” and “Arishtas”, useful for management of diabetes, said composition comprising a therapeutically effective amount of plant extracts, self-generated ethanol to the extent of 7 to 12\% v/v and having not more than 1 to 3\% w/w of sugar content.\textsuperscript{[21]} This invention also provides a novel method for the manufacture of herbal compositions in liquid oral dosage form containing a limited amount of self generated ethanol.\textsuperscript{[22]}

This process facilitates the production of fermented liquid orals virtually free from sugar and hence provides benefits to the large segment of population suffering from Diabetes.\textsuperscript{[23]} The invention also relates to the unique herbal composition for reducing the blood sugar levels in the mammals especially humans suffering from diabetes.\textsuperscript{[24]}

Constipation

Ispaghula emulsion is used in the treatment of constipation in patients. Fecal softeners are used such as Arachis oil or mineral oil (liquid paraffin) used to soften the fecal material for the ease of expultion.\textsuperscript{[25]}

Malaria

Decoction of Cinchona bark is given for the treatment of malaria to lowering the body temperature and provide relief.

Arthritis

Recent researches have showed an assured result that Maharasnadhi Quath (decoction) and Weldehi Choorna is used in treatment of arthritis. Complete reliefs have been gained by the patients.\textsuperscript{[26]}
Senescence

Amla, Bhalatak, Brahmi, Chhuhara, Guduchi in the different form of oral liquid dosage form are used to rejuvenate the body and prevent aging. These ingredients lead to increase the immunity also and brain efficacy.

CONCLUSION

Oral dosages forms are very popular dosages forms of Ayurvedic System of Medicine because of compatibility of dosage administration to the patient which make them more suitable as compared to other formulated preparations. These consist of both fermented and non fermented syrups suspensions. One of the oral ayurvedic formulations is tonic which had been used from many decades. These formulations are more potent and have been proved its potency and vitality as a tonic in many physiological conditions, so its standardization is the main issue and it is most important to check many of its properties as an oral formulation for its stability purpose. From the present review, it has been concluded that, liquid oral dosages are best formulations in ayurveda because these are most compatibility and easy to administer for the large categories of patients.

REFERENCE


