

“ Aspects Of Research In Ayurveda”

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ABSTRACT:-

Ayurveda has been an ancient system of medicine of India which is being used over centuries to live a healthy and worth living life. Though proved useful in many areas of medicine, it has its own shortcomings. It is one of the most esteemed traditional systems of medicine that has survived and flourished from ages till date. It is estimated that up to four billion people (representing 80% of the world's population) living in the developing world rely on herbal medicinal products as a primary source of healthcare and traditional medical practice which involves the use of herbs is viewed as an integral part of the culture in those communities. However, due to so many hurdles such as lack of literature sources in other languages and improper awareness about the basic principles and histories of the systems from different ethnic origins, there is a lack of exchange of information from systems around the globe. Interestingly, *Ayurveda* has ability to treat many chronic diseases such as cancer, diabetes, arthritis, and asthma, which are not properly treatable in modern medicine. Unfortunately, due to lack of scientific validation in various concepts, this precious gift from our ancestors is trailing. Hence, evidence-based research is demand of time for global recognition and acceptance of *Ayurveda*, which needs further advancements in the research methodology.

Keywords:-Ayurveda, Traditional system, Chronic Diseases, Herbal Medicinal Products etc.

INTRODUCTION:

Ayurveda is considered as one of the oldest of the traditional systems of medicine (TSMs) accepted worldwide. The ancient wisdom in this traditional system of medicine is still not exhaustively explored. The amalgamation of the rich knowledge from different traditional systems of medicine can lead to new avenues in herbal drug discovery process. The improper understanding of the differences and similarities between the theoretical doctrines of these systems is the major hurdle towards their convergence apart from the other impediments in the discovery of plant based medicines. *Ayurveda* is one of the few systems of medicine developed in ancient times that is still widely practiced in modern times.^[1] As such, it is open to the criticism that its conceptual basis is obsolete and that its contemporary practitioners have not taken account of the developments of modern medicine.^[2,3] Responses to this situation led to an impassioned debate in India during the early decades of the twentieth century, between proponents of unchanging tradition ("pure" *ayurveda*) and those who thought *Ayurveda* should modernise and syncretize ("impure, tainted" *ayurveda*).^[4,5,6] According to the World Health Organization, about 70–80% of the world populations rely on nonconventional medicines mainly of herbal sources in their healthcare.^[7] Public interest for the treatment with complementary and alternative medicine is mainly due to increased side effects in synthetic drugs, lack of curative treatment for several chronic diseases, high cost of new drugs, microbial resistance, and emerging diseases, etc.^[8]

Ayurvedic treatment is although highly effective; proper mode of action, pharmacology, pharmacokinetics, and pharmacovigilance of many important Ayurvedic drugs are still not fully explored. Moreover, the comprehensive knowledge of the basic ideologies of *Ayurveda* is poorly acceptable scientifically due to lack of evidence. In the modern time, when the Western medicinal system is reached almost at the top because of validated research and advanced techniques, there is an urgent need to validate basic principles as well as drugs used in the *ayurvedic* system of medicine with the help of advanced research methodology.

In today's scenerio research is the demand of time for the contemporary *Ayurveda*, as it is based more on faith and on observational evidence and little experimental and analytical validation and proof has been provided to it.^[9]

Ayurveda needs research designed to test and validate its fundamental concepts as well as its management approach. In this context, if *Ayurveda* is to be truly explored and validated in all its aspects, scientific inputs should confirm its principles and philosophy. Multiple researches have been done on *Ayurvedic* text regarding its textual concept, but in today scenario it is

difficult to prove any concept without being validate. With the growing demand and globalization of the Ayurveda system of medicine, it has become an essential and urgent need to bring Ayurveda into the mainstream progressive sciences. The progressive sciences undergo continuous rectification and modification in tandem with the changing scenario of the nature and the lifestyles. The research in *Ayurveda* becomes essential as the classical texts, the guiding principles were written centuries before. A lot has changed since then which mandates the modification and renewal of the same on scientific parameters.

Aim: -

1. To explore the various *Ayurvedic* concepts and principles related to Research.
2. To explore the shortcomings and possible solution about the research in Ayurveda

Materials and Methods:-

Materials related to research in *Ayurveda*, its present status, shortcomings, solution and other Related topics have been collected. We have used various classical texts and also referred to The modern books and searched various websites to collect information on the relevant topics.

The Area & Technologies Which Has To Be Explored & Adopted:

The research phenomenon is not new to the *Ayurveda*. The Research has been as old as the human tradition. The *Ayurveda* classical texts are full of the direct and indirect references suggesting of research activity eg:

Table:-1 Ancient methods of research and Pramanas (Evidences/ Investigations)

<i>Vidya</i> - Textual Knowledge	<i>Aptopadesha</i> -Authoritative Statement
<i>Vitarka</i> - Rationale/ Logical Reasoning	<i>Pratyaksha</i> - Direct Perception
<i>Vignana</i> - Scientific Method	<i>Anumana</i> - Inference
<i>Smruti</i> - Memory	<i>Yukti</i> - Logical Resoning
<i>Tatparta</i> - Repeated observation / Curiosity	<i>Kriya</i> - Practical application

The words synonymous with the research in *Ayurveda* classics are *anusandhana*, *anaveshana*, *gaveshana*, *pariksha* etc.^[10] These words in the ancient Indian Sanskrit literature are of great significance as they denote the proximity of the research activity and the society. The word *gaveshana* literally means the search for the missing cows. This implies the search for the missing links between the cause and the effect, the universal principle postulated and discussed in detail in the Indian Philosophical schools. *Ayurveda* is in fact one step ahead as it stresses upon the *pariksha* (examination) as the synonym for research.^[11] The examination is the key word of discussion mentioned in the *Ayurveda* classics as the definite road to the attainment of knowledge. The research methodology of the classics and the contemporary methods of research differ at various levels which needs to be pondered over and the acceptable solution be searched, it is however certain beyond doubt that there is a lot of scope of research in *Ayurveda* which is the need of the hour.

1. LITERARY RESEARCH:

Literature research is a soul of fundamental/ conceptual research which, with possible integration with modern sciences would be beneficial for better health care practices for tomorrow. The aim of basic research in *Ayurveda* is to explore the scientific innovations and opportunities in fundamental concepts of *Ayurveda*. The fundamental research includes replacement of faith and suppositions with the scientific reasoning complimented with the facts and figures. The objectives of the investigation in the fundamental research are categorized into the human body (*Purusha*), the disease (*Vyadhi*), the medicine (*Aushadha*), and the right time for action (*Kriyakala*).^[12]

Multiple researches have been done on *Ayurvedic* text regarding its textual concept, but in today scenario it is difficult to prove any concept without being validate. So, development of parameters to assess *Panchmahabhoota*, *Tridosha*, *Agni*, *Dhatu*, *Ojas*, *Srotas*, *Ama*, *gunas*, *Shatkriyakala*, *Samprapti*, *Prakriti* etc on a scientific basis is a need of time. For this purpose *Ayurveda* researchers should do their researches in collaboration with modern science.

The following area for literary/fundamental research should be adopted-

- As so many of the *Ayurvedic* literature/ manuscripts is either partially available or not published, so its an urgent need to collect, preserve and publish the literature after proper re-assessment and critical study

- To centralized and re-evaluate the various scattered concepts on modern parameters (Objective or Measurable)
- To prepare critical editions of ancient books
- Reformation of Ayurvedic epistemology
- To explore the latent topics eg: concept of *Avarana*, Genetic disorders in *Ayurveda* etc
- To explore the vital concepts e.g *Aahar-Vihar-Pathyapathya* in relation to life-style disorders/ Metabolic disorders, *Rasayana-Vaajikarana* for autoimmune disorders/ age related disorders etc.

2. Drug Research

The drug research deals with the identification of the new drugs with their detailed analysis with regards to its attributes, qualities, action, dosage and safety issues, if any. The points of the drug research have been explained in the *Vimana Sthana* of the *Charaka Samhita* and play a pivotal role in a comprehensive research of a drug¹³. There are many references present in *Ayurvedic* literature about the drug research but they all are scattered so collection and compilation of all the related matters in one place is definitely be fruitful for the drug research. The properties of ideal drugs as described in classical texts should be adopted as the sole objectives of the drug research¹⁴ -

- Abundantly available.
- Must be eligible for medicament.
- Acceptability for various pharmaceutical forms.
- should possess all properties.

In *Charaka Samhita* there is description of points in favour of drug examination/—

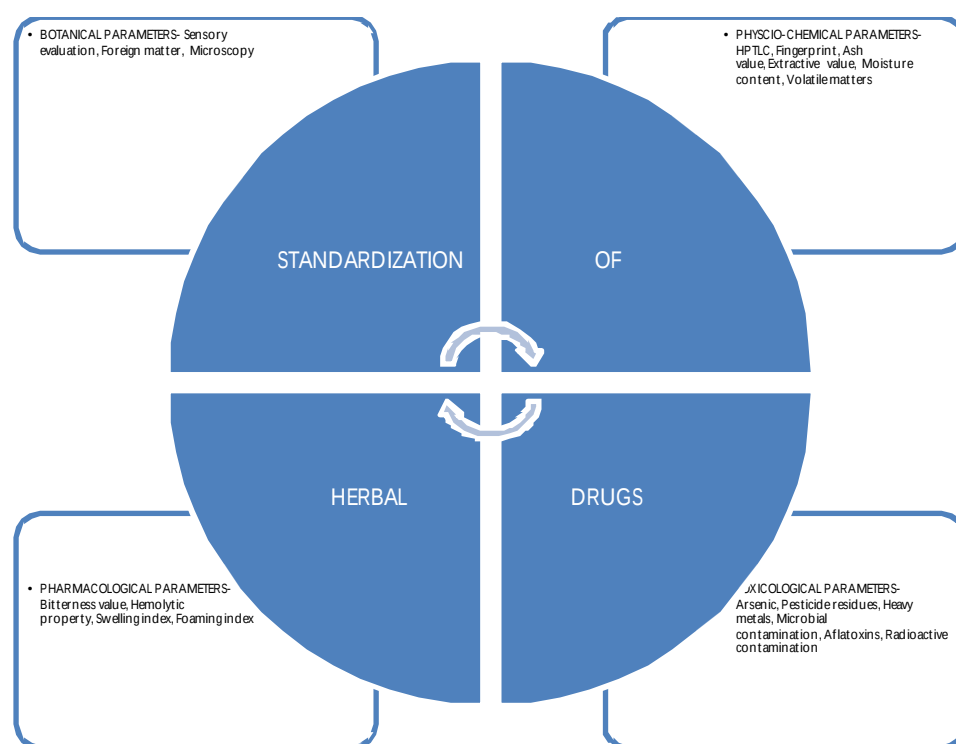
Table 2: Standardization of drugs in Ayurveda -

<i>Prakriti</i> (Nature of the drug)	<i>Gunam</i> (Qualities of the drug)
<i>Prabhavam</i> (Specific action of the drug)	<i>Asmin deshejatam</i> (Place of growth)
<i>Asmin rutaumatam</i> (Season of collection)	<i>Grihitam</i> (Mode of collection)
<i>Nihitam</i> (Preservation method)	<i>Upaskrutam</i> (Processing method)
<i>Matrayayuktam</i> (Dosage)	<i>Dosham apakarshtyupashamayati</i> (Elimination or Alleviation of Doshas)

Ayurvedic medicine was in practice at times of limited access to technologically variable norms of standardization. Standardization of *Ayurvedic* botanicals and medicines is seriously

required, although one cannot readily apply the typical modern pharmaceutical Pharmacopoeial standards. The concept of active markers in the process of standardization needs a flexible approach in favour of the complex nature of these herbal materials. Recently, many international authorities and agencies, including the World Health Organization, European Agency for the Evaluation of Medicinal Products and European Scientific Cooperation of Phytomedicine (ESCOP), US Agency for Health Care Policy and Research, European Pharmacopoeia Commission, Department of Indian System of Medicine has started developing new mechanisms to induce and regulate quality control and standardization of botanical medicine. For Ayurvedic medicine and other traditional medicines, newer and regularly updated guidelines of standardization are required¹⁵.

Fig. 1: WHO has set certain parameters for standardization of herbal drugs¹⁶ -



The primary lacunae with *Ayurvedic* and other traditional herbal products are the lack of drug standardization, information, quality control, and strict monitoring¹⁷. To overcome these lacunae one must stick to the implementation of rules, monitoring and periodic revision of regulations are absolute necessary.

The following are some areas which needs to be explored-

- Proper identification and nomenclature

- Toxicological data and adverse effect
- Interaction of herbal drug with other conventional drug
- Pharmacokinetics & Pharmacodynamics
- Proper dosage instructions
- Interdisciplinary and Multicentric research

3. Diagnostic tools (Rogi-Rog Pareeksha)

Several sorts of *pareeksha* (Examination) are referred in *Ayurvedic* texts which encompass *Dasavidha pareeksha*¹⁸, *Astasthan pareeksha*¹⁹, *Shadvidha pareeksha*²⁰, *Trividha pareeksha*²¹ etc. and are not scientifically practised now a day. Some of the above mentioned examinations have been given least importance in case taking and has now turned customary and plenty of aspects of examination are neglected. The approach of diagnosis in *Ayurveda* mainly depends on the in-depth understanding of *Nidana-Dosha-Doosha-Prakriti-Vikriti* etc. Today with the advancement in the Medical field, the diagnosis disease can be accomplished from the start and the progress of the diseases can be stopped. But sometimes the patient cannot afford expensive imaging techniques like CT scan, MRI etc. Thus, we have to know the diagnosis according to *Ayurveda* which helps in reducing the financial burden on the suffering patients. So, it is the need of time to increase our proficiency in clinical diagnosis. We must try and inculcate the knowledge of clinical diagnosis in *Ayurvedic* practitioners as well as in academic field and explain the utility of the clinical diagnosis. Knowing the use of current diagnostic methods is appreciable, but it is more important to know the conditions in which these investigations should be used. There is some area which needs special attention in *ayurvedic* diagnostic discipline -

- Proper and well organized format for routine examination
- System specific examination format
- Pulse diagnosis, *Purisha Nimajjana Pareeksha*, *Taila Bindu Pareeksha*
- Diagnosis of *Aavarana janya vyadhi*
- Inclusion of modern technologies for *Ayurvedic* diagnostic parameters

4. Clinical Research:

During the past decades, public interest in natural therapies, namely herbal medicine, has increased dramatically not only in developing countries but also in industrialized countries. This has renewed and rejuvenated the international trade in herbal medicine enormously and

has attracted most of the pharmaceutical companies, including the multinationals²². The success story of complementary medicine has also been supported by the more accentuated research efforts into their safety and effectiveness; however a lack of scientifically valid research into complementary medicine has always been a significant barrier to orthodox medicine in accepting these health care approaches²³. The main principle of the treatment in Ayurveda is discontinuity of pathogenesis by identifying the cause and related factors involved in the etio-pathogenesis of the disease and accordingly plan treatment either by selecting appropriate formulations or procedures along with avoidance of the causative factor. Further, as the disease may manifest differently in different individuals, every individual may need specific set of the treatment for efficient management. This indicates that a single formulation may not be very effective in every stage of disease, that too in different individuals. As *Ayurveda* considers disease occurring due to multi-factors and follows multi-targeted management, a research design where a single formulation is attempted in different patterns of presentations with different phenotypes can never give satisfactory outputs and hence overall results of most of the researches planned without this approach ends up in the mild response or even negative findings. Planning individualistic approach treatment protocol in a single research trial is a need of the time, but such projects will be based on large sample analysis²⁴.

Table 3: Clinical trials are generally designated in terms of a Phase²⁵ –

Phase I: For a new compound or a new formulation, carried out with a small number of healthy volunteers or patients. The main purpose of a phase I trial is to observe tolerance to the herbal medicine and therefore to get an indication of the dose that might be used safely in subsequent studies.
Phase II: Studies on a limited number of patients to determine clinical efficacy and to further confirm safety. Such trials are preferably designed as randomized, double-blind, controlled studies, using for control groups either an existing alternative treatment or a placebo. The dosage schedules established in such studies are then used for a more extensive clinical study.
Phase III: A larger patient group is usually studied at several centres using a randomized double-blind design to validate preliminary evidence of efficacy obtained in earlier studies.
Phase IV: Studies performed after the dosage form is available for general use. The main purpose of such studies is to detect toxic events that may occur so rarely that they are not detected earlier

There is lack of scientific evidence to evaluate safety and efficacy of herbal drugs. The quality of the trial drug has to be tested for batch-to-batch uniformity of the active constituents. It is very difficult to have active and control groups with identical color, smell and taste of the herbal drug, which cannot be imitated while manufacturing a placebo. Clinical evaluation of herbal drugs has been found to have shortcomings in trial design, improper execution and weak data analysis²⁶. Inappropriate number of patients in trials, improper randomisation and selection bias has been observed in previous clinical trials with herbal medicine^{27,28}. These challenges can be reduced or overcome by applying most recent methodologies and guidelines for clinical trials.

Discussion & Conclusion:

Ayurveda is based upon its very own essential standards, its own holistic biology, materia medica and diagnostics. *Ayurveda* puts greater emphasis on promoting of fitness and prevention of disease than mere ailment and remedy. But due to paucity of studies and documentation, the science remains in large part unexplored. There are diverse evidences of research in Ayurvedic classics. Charak Samhita begins with a quest, 'the search for sturdiness'. Thus the first phrase itself suggests the chain of quest and attempts or researches completed inside the manner to finish the dreams. *Charak Samhita* has explained the significance of proper examinations even as explaining the significance of choosing healthful routine.

Today, the cost of fitness care is continuously growing, and affecting human being's capability to find the money for fitness insurance. Drug-based medicines are being unaffordable for economically bad international locations like India and elaborate inside the Western nations due to numerous side results. The drug needs to be the ultimate in place of first mean of treatment, beginning with the natural restoration approach like *Ayurveda*. The development of recommendations for methodology in *Ayurveda* calls for a massive expert paintings both by means of academicians and practitioners who have to have the important expertise and motivation for this challenge. Otherwise, *Ayurveda* will step by step lose its identity and will become a history of drugs. Although the procedure of studies is time taking however it's miles the handiest manner to overcome the problems in the promoting of *Ayurveda* worldwide. The paintings in a coordinated and well-organized way without a bias can enhance *Ayurveda*. Nevertheless, it additionally a sour truth that modern-day researches have not been very profitable for *Ayurveda* itself as maximum of those researches is getting used *Ayurveda* to increase modern bioscience. In the present day time, when the Western

medicinal device is reached nearly at the top due to established studies and advanced techniques, there is an pressing want to validate fundamental standards in addition to pills used in the *ayurvedic* device of drugs with the help of superior studies methodology. Therefore, improvements in the ongoing research technique are notably required for the promoting of *Ayurveda*.

SOURCE OF SUPPORT: Nil

CONFLICT OF INTEREST: The authors declare that they have no conflict of interest.

ETHICAL APPROVAL: No ethical approval is required as no animals or humans have been used in the study.

REFERENCES :

1. **Smith, Frederick M.**; Wujastyk, Dagmar (2008). "Introduction". In Smith, Frederick M.; Wujastyk, Dagmar. *Modern and Global Ayurveda: Pluralism and Paradigms*. New York, NY: SUNY Press. pp. 1–28
2. **Leslie, Charles, ed.** (1976). *Asian Medical Systems*. Berkeley: University of California Press.
3. **Taylor, Carl.** "The Place of Indigenous Medical Practitioners in the Modernization of Health Services". In Leslie, Charles. *Asian Medical Systems*. pp. 285–292.
4. **Leslie, Charles.** *The Ambiguities of Medical Revivalism in Modern India*. pp. 356– 367.
5. **Sharma, Shiv** (1975). *Ayurvedic Medicine: Past and Present*. Calcutta: Dabur (S. K. Burman).
6. **Berger, Rachel** (2013). *Ayurveda made modern : political histories of indigenous medicine in North India, 1900-1955*. New York, NY: Palgrave Macmillan
7. **Jacqui W.** Herbal products are often contaminated, study finds. *BMJ* 2013; 347:f6138
8. **Humber JM.** The role of complementary and alternative medicine: Accommodating pluralism. *J Am Med Assoc* 2002; 288:1655-6
9. **Lodhe. Laxman:** *Ayurvedic Research with Modern Analytical Methods*
10. **Sharma P. V.,** *Ayurvediya Anusandhana Paddhati*, Third edition, Varanasi (India), Chaukhamba Orientalia, 2012; p. 3.
11. **Dadu V.,** *Textbook of Padartha Vijnana and history of Ayurveda*, First edition, Jodhpur (India), 2016; 119-124.

12. **Sharma PV**, editor. Sushruta Samhita, Sutra Sthana, Vol. 1, 1/22, Varanasi: Chaukhamba Visvabharati; 2013. p. 16
13. **Acharya Y. T.**, Charak samhita with Ayurveda Deepika Commentary of Chakrapani, Reprint edition, Varanasi (India), Chaukhamba Surbharati Prakashan, 2016, p. 275
14. **Acharya Y.T** , editor, Charak Samhita with Ayurveda Dipika commentary of Chakrapanidatta, Sutra Sthana, 9/7; 5th edition, Varanasi , Chaukhambha Sanskrit Sansthan, , 2001, p 63
15. **Sharma Ashish K, Kumar Rajesh, Mishra Anurag, Gupta Rajiv**. Problems associated with clinical trials of Ayurvedic medicines. Rev. Bras. farmacogn. [Internet]. 2010 May [cited 2019 Dec 21]; 20(2): 276-281
16. **Dhiman Anju, Sharma Kavita, Sharma Asha, Sindhu Pawan**. A review on the status of quality control and standardization of herbal drugs in India. Drug Development and Therapeutics. 2016, [cited 2019 Dec 21]; 7(2):107-122
17. **Joy PP, Thomas J, Mathew S, Skaria BP**. Medicinal Plants. Ernakulam: Kerala Agricultural University; 1998
18. **Shukla V, Tripathi R**, editor, Charak Samhita, Sutra Sthan, 8/94, 1st ed., Vol. I, Delhi, Chaukhamba Sanskrit Pratisthan, 2002. p 642
19. **Yogarajnakar**, 1/1, 1st ed, Varanasi, Chaukhamba Prakashan, 1996, p 43
20. **Yadavji Trikamaji**, editor, Sushruta Samhita, Sutra Sthan, 10/4, 7th , Varanasi, Chaukhambha Orientalia, 2002
21. **Shukla V, Tripathi R**, editor, Charak Samhita, Sutra Sthan, 4/5, 1st edition., Vol. I, Delhi, Chaukhamba Sanskrit Pratisthan, 2002. p 582
22. **Shiapus M**. Postmodern values, dissatisfaction with conventional medicine and popularity of alternative therapies. J Sociol. 1998; 34: 58-70
23. **Robbers JE, Tyler VE**. Tyler's Herbs of Choice: The Therapeutic Use Of Phytomedicinals. New York: The Haworth Herbal Press; 1999, p. 124-58
24. **Goyal M**. Clinical trials in Ayurveda: Issues, challenges and approaches. Ayu. 2017; 38(1-2):1-2
25. <https://apps.who.int/medicinedocs/4.5.html> (Accessed on 25.12.19)
26. **Moreira D.L., Teixeira S.S., Monteiro M.H.D., De-Oliveira A.C.A.X., Paumgarten F.J.R**. Traditional use and safety of herbal medicines. Rev Bras Farmacogn. 2014; 24:248-257

27. **Linde K., Jonas W.B., Melchart D., Willich S.** The methodological quality of randomized controlled trials of homeopathy, herbal medicines and acupuncture. *Int J Epidemiology*. 2001; 30:526–531
28. **Srinivasan K.** Spices as influencers of body metabolism: an overview of three decades of research. *Food Res Int*. 2005; 38:77–86