

How research can facilitate Ayurveda's acceptance among medical stakeholders

Dr P Ram Manohar MD (Ay)

Director and CSO, AVP Research Foundation

Ayurveda Diversified

- To summarise in one word, the globalisation of Ayurveda has turned out to be the diversification of Ayurveda.
- So much so that it becomes difficult to characterise what constitutes the core of Ayurveda.
- More than being adapted to changing times and places, Ayurveda seems to have been modified for commercial and knowledge exploitation.

Are there many Ayurvedas?

- North Indian Ayurveda, South Indian Ayurveda, Kerala Ayurveda - we have heard enough of such things.
 - And now European Ayurveda, American Ayurveda... maybe German Ayurveda???
- What does this all mean?

Ayurveda – the knowledge of life

- It is interesting to see that Ayurveda means just Knowledge or Science of Life, it was never projected as “Indian” Medicine.
- Whereas most of the major medical systems are linked to geographical regions by name - Traditional European Medicine, Traditional Chinese Medicine. In fact, Unani means ‘of Greek Origin’. Ionian, Yavana, Unani. Of course, the name Homoeopathy indicates the principle and Natural Medicine the philosophy.

The first principles of Ayurveda are universal

- The first principles of Ayurveda are believed to be universally applicable.
- Ayurveda is the knowledge that manifests when there is a close interaction between humans and the rich biodiversity around them. This can in principle, happen anywhere in the world.

Two aspects of Ayurveda

- There are two aspects to Ayurveda - the core principles that form the foundation and the applications that have to be adapted based on the place and time.
- Diversification of its practices based on the foundational principles gives rise to local expressions of Ayurveda. Ayurveda advocates that people living in a locality should primarily learn how to use the local resources.

Three tier structure

- The foundational principles are known as Tatva. In order to find localised context specific applications, theory or Sāstra is built from the principles. Using the theories, specific applications called Vyavahāra are derived.
- The principle (Tatva) is like the territory. The theory (Sāstra) is like the map. And the application (Vyavahāra) is like traveling with a map.
- To travel in India, we need a map of India and to travel in Europe, we need a map of Europe.



Cartography

- The principles of Cartography (map making) is foundational. All maps are made using these principles and techniques. But each map is different and each journey with different maps become different.
- Even so, the basic principles of Ayurveda are foundational. But its application in different contexts will be diverse.

Not losing the principles in diversification

- The challenge therefore is to not lose the principles, the core of Ayurveda in the process of diversification.
- In the modern world, Ayurveda seems to have fallen into this trap in the process of globalisation. The diversification is happening at the cost of its core principles.

How research can help?

- It is important to ensure that diversification of Ayurveda in the wake of globalisation, which is inevitable, happens with the strong foundation of its core concepts.
- If this is to happen, research in Ayurveda has to be initiated with a focus to validate and articulate the core concepts of Ayurveda.

Three misconceptions

- There are three major misconceptions that causes the deviation of Ayurveda from its foundations.
- Ayurveda is reduced to drugs, to herbs, herbal medicine.
- Ayurvedic drugs are further simplified losing the richness of its complex formulations based on the concept of synergistic actions.
- Ayurvedic treatments are grossly simplified for easy application and acceptance.

Three pronged strategy for research

- From this understanding we can derive a three pronged strategy for research in Ayurveda that will help to preserve its core in the process of globalisation.
- **Research to validate concepts of Ayurveda on the basis of which drugs are used.** The concept of Sāmya, Doṣa, Śodhana, Rasāyana, Prakṛti and so on. Ayurveda is not just the drugs but the concepts.
- **Research that studies the complex ways in which herbs are combined and processed in Ayurveda,** rather than the study of single herbs and single molecules. Ayurveda is not chemical entities or molecules but molecular cocktails derived by complex algorithms of molecular combinatorics.
- **Research that studies the complex person centred multimodal approach to treatment.** Single component disease specific approach does not help to demonstrate the strength of Ayurvedic treatment.

From Drugs to Concepts

NOMENCLATURE

Codification of Names

Enumeration on Time Line

Classification of Nomenclature

Descriptive Analysis of Names

IDENTIFICATION

Botanical features

Differential properties of parts

Varieties Related species

Substitutes

Adulterants

PROPERTIES

Physico-Chemical Properties

Bio-transformation Pharmacology

Target

Risk Benefit

Analysis Interactions with

other herbs, antagonism,

synergy

Interactions with foods

APPLICATIONS

Classification

Disease Target

Formulation

Pharmaceutical Processing

Dosage Form

Mode of Administration

Individualisation

From herbs and molecules to Molecular combinatorics and molecular cocktails

- Synergism of molecules
- Antagonism of molecules
- Herb and herb interactions
- Herb and food interactions
- Combinatorics
- Indications and Contraindications
- Dāḍimāṣṭaka Cūrṇa and Dāḍimādi Ghr̥ta - Pomegranate fruit skin is common ingredient, one arrests diarrhoea, other relieves constipation.

From single component disease centred treatment to whole system approach

- Body, Mind, Self
- Psychosomatic
- Medicine, Diet, Behaviour
- Multiple internal medicines and multiple external therapies
- Multiple formulations
- Specific formulations
- Specific herbs
- Meta Analysis and Systematic Reviews
- Randomised Controlled Trials
- Uncontrolled Trials
- Observational Studies
- Case Series
- Case Studies
- Anecdotes

Example One

- The genomic basis of Doṣaparakriti (a reasonable correlation between HLA type and Prakriti type, Bhushan Patwardhan et al, SNPs and Prakriti type, MS Valiathan et al, Platelet Aggregation, Supriya Bhalerao et al)
- Effect of rasayanas on DNA chain break repair - Amalaki Rasayana has protective effect and enhances genomic stability, Umakanta Swain et al., Increased life span in drosophila (Vibha Dwivedi et al)
- Microstructure of metallic bhasmas (Rasasindūra has different crystalline structures than Mercury sulphide, it exists in a nano form, yet chemically it is Mercury sulphide, A. Arun et al)

Example two

- **Curcumin and Pepper -**

Influence of piperine on the pharmacokinetics of curcumin in animals and human volunteers.

Shoba G, Joy D, Joseph T, Majeed M, Rajendran R, Srinivas PS, *Planta Med.* 1998 May;64(4):353-6.

In humans after a dose of 2 g curcumin alone, serum levels were either undetectable or very low.

Concomitant administration of piperine 20 mg produced much higher concentrations from 0.25 to 1 h post drug ($P < 0.01$ at 0.25 and 0.5 h; $P < 0.001$ at 1 h), the increase in bioavailability was 2000%

- **Flavonoids and berberine -**

Synergy-directed fractionation of botanical medicines: a case study with goldenseal (*Hydrastis canadensis*)

Junio HA, Sy-Cordero AA, Ettefagh KA, Burns JT, Micko KT, Graf TN, Richter SJ, Cannon RE, Oberlies NH, Cech NB, *J Nat Prod.* 2011 Jul 22;74(7):1621-9

The flavonoid synergists are present at higher concentration in extracts from *H. canadensis* leaves, while the antimicrobial alkaloid berberine is present at higher levels in *H. canadensis* roots. Thus, it may be possible to produce an extract with optimal activity against *S. aureus* using a combination of goldenseal roots and leaves.

- **Liquorice and its alkaloids -**

Synergy in Herbal Medicinal Products: Concept to Realization

Pulok K. Mukherjee, Ponnusankar S and Venkatesh P, *Ind J Pharm Edu Res*, Jul-Sept, 2011/ Vol 45/ Issue 3

A crude extract of liquorice inhibits angiogenesis, granuloma formation and fluid exudation in a mouse model of inflammation, as does isoliquiritin and related compounds, whereas glycyrrhizin and glycyrrhetic acid tend to promote angiogenesis.

Example three

- Research designs to study complex Ayurvedic interventions - The concept of Whole System Research.
- The NIH funded study conducted at AVP, Coimbatore, in collaboration with UCLA, UW, won the “Excellence in Integrative Medicine Research Award” from ESIM, recommended as blue print for future studies on CAM by Dr. Edzard Ernst.
- Double-blind, randomized, controlled, pilot study comparing classic ayurvedic medicine, methotrexate, and their combination in rheumatoid arthritis.
Furst DE, Venkatraman MM, McGann M, Manohar PR, Booth-LaForce C, Sarin R, Sekar PG, Raveendran KG, Mahapatra A, Gopinath J, Kumar PR. ,J Clin Rheumatol. 2011 Jun;17(4):185-92
- The methodology paper from Charite/EAA/CCRAS
- Comparative effectiveness of a complex Ayurvedic treatment and conventional standard care in osteoarthritis of the knee – study protocol for a randomized controlled trial
Claudia M Witt, Andreas Michalsen, Stephanie Roll, Antonio Morandi, Shivnarain Gupta, Mark Rosenberg, Ludwig Kronpaß, Elmar Stapelfeldt, Syed Hissar, Matthias Müller and Christian Kessler, Trials 2013, 14:149

Concluding remarks

- Validation of core Ayurveda concepts, Study of the complex methods of drug formulations and the Study of the outcomes and mechanisms of complex treatments seem to be the priority areas for research in the wake of globalisation.
- We need to ensure that Ayurveda adapts and diversifies but at the same times does not deviate from its foundational principles.

Thanks for the attention