

## METHODS OF SCIENCE ACCORDING TO AYURVEDA: A CONCEPTUAL STUDY

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### ABSTRACT

A history of *Ayurveda* of past 3000-5000 years is known to us. Even after thousands of years the principles of *Ayurveda* have stood on the test of the time. There were many changes that occurred from *vedic* to *samhita* period which can be called as paradigm shifts. E.g. the *chikitsa* was mainly based on *mani-mantra* i.e. *Daivavyapashraya* in *vedic* period, this changed to *Yuktivyapashraya chikitsa* as a main *chikitsa* in *samhita* period. This development took place in *Ayurveda* which was not possible without specific thoughts i.e. scientific methods. *Ayurveda* still remains alive as a precious cultural heritage in different societies of the world. The reason behind this is the scientific approach and scientific methods used in *samhitas*. The various *siddhantas* have been established after various observations and applying specific methods. The *siddhant* is the conclusion which is established by scientists after testing the facts in several ways and proving them with valid reasoning. *Siddhanta* is one of the examples of scientific method; in this paper we will summarize various scientific methods from *ayurvedic* literatures. This knowledge of existence of certain methods of science in *Ayurveda* will fortify our faith in the ancient Ayurvedic literatures and also motivate us to do research in *Ayurveda*.

**Keywords:** *Siddhanta*, Scientific methods, *Ayurveda*.

### INTRODUCTION

In year 2000, WHO made a survey and concluded that 75% of the world population is using traditional medicine<sup>1</sup>. Traditional Chinese medicine has already been given universal acceptance. Even *ayurveda* in some years will get universal acceptance. But there is a misconception of *ayurveda* being non-scientific. Hence, it is necessary to give relevance that *ayurveda* is scientific. Before further discussion about this topic, it is necessary to try and understand the meaning of the word 'scientific method' and its importance. The Oxford English Dictionary<sup>2</sup> defines scientific method as: "a method or

procedure that consists of systematic observation, experimentation, formulation, and modification of hypothesis." Scientific method is the framework by which science is discovered. The scientific method is also defined as a doctrine of formulating theories and testing them by experiments. These scientific methods have been very aptly described in the famous book "Seeds of discovery" by W.I.B. Beveridge<sup>3</sup>. He has summarized scientific methods as follows:

1. Recognition and formulation of the problem
2. Collection of relevant data

3. Arriving at hypothesis by induction, indicating casual relations or significant patterns in the data
4. Making deductions from hypothesis and testing the correctness of these by experimentation or collection of more data.
5. Reasoning that if the results are consistent with deduction, the hypothesis is strengthened but not proved.

Various scientific fields use the above methods in their studies and these methods form the foundation for their studies, which can be moulded according to their studies.

#### Need of study of scientific methods

In, 'How the great scientists reasoned?'<sup>4</sup> a book published in 2013, it is described about how the old scientists like Einstein, Newton and Bohr used scientific methods. If in year 2013 the people of conventional science can think of the scientific methods used by the old scientists so many years ago, then why we cannot study the scientific methods used in our *ayurvedic* texts which are very helpful to keep alive our science over thousands of years.

While comparing between thoughts in *Veda* and those in *Ayurveda Samhitas* we find some ground-breaking changes in thoughts and thinking process of *Ayurveda*. This development would have taken place in at least 2000 years. But sadly, no information about the scientific thinking of this period of 2000 years is available at the current time. But no science can be developed without scientific thinking. Hence there is a need to study scientific method in classical *ayurvedic*

texts. There are many such methods found in *Charak Samhita* also. Even an Indian philosopher Deviprasad Chattopadhyaya has mentioned that Indian philosophy 'Darshan' has scientific aspects.<sup>5</sup> He also mentioned that *Charak Samhita* was the only ancient text containing science in it.

It is the *Charak Samhita* which got rid of the blind beliefs and superstitions of olden days in respects of cautions and cure of disorders and developed a rational attitude towards these problems. In early phase, perhaps *daivavyapashraya* (supernatural/superstitious) therapy was mostly relied upon, but *charaka* added *yuktivyapashraya chikitsa* to make it logical and scientific.

#### DISCUSSION

First observation is about how past modern scientists reasoned and how *Charkaacharya* reasoned. Modern scientists like Einstein, Newton first of all formed a hypothesis. Then they experimented thoroughly on that particular hypothesis. Many such scientists then gathered together & discussed about the hypothesis. After the discussion they reached at a consensus. This final result was then verified by other scientists and then the hypothesis was accepted or further studied if it was discarded. In a very similar way, *Charkaacharya* and other *acharyas* formed their own views & opinions about a topic. Then all these *rishis* gathered and discussed their views & opinions. At last they arrived at a consensus. Then the final consensus was accepted. There are 7 such *parishadas* mentioned in *Charak Samhita* when *rishis* had gathered and finalized their opinions; seven *parishada* as follows:

<i>Sthana</i> in <i>charak samhita</i>	Chapter number	Chapter Name	Subject of Parishada
1. <i>Sutrasthana</i>	1 <sup>st</sup> chapter	' <i>Dirgham jivitya adhyay</i> '	Solutions for diseases

2. <i>Sutrasthana</i>	12 <sup>th</sup> chapter	' <i>Vatkalakaliya adhyay</i> '	<i>Vat, Pitta, Kapha</i> properties and functions
3. <i>Sutrasthana</i>	25 <sup>th</sup> chapter	' <i>Yajjapurshiya adhyay</i> '	<i>Uttpati</i> of <i>Purush</i> and <i>Rog</i>
4. <i>Sutrasthana</i>	26 <sup>th</sup> chapter	' <i>Atreyabhndra kapiya adhyay</i> '	Discussion on <i>Madhuradi ras sankhya</i>
5. <i>Sharirsthana</i>	3 <sup>rd</sup> chapter	' <i>Garbhavakranti adhyay</i> '	<i>Garbha uttpati</i>
6. <i>Sharirsthana</i>	6 <sup>th</sup> chapter	' <i>Shariravichaya adhyay</i> '	Discussion on which is first organ formed during <i>Garbha uttpati</i>
7. <i>Siddhisthana</i>	11 <sup>th</sup> chapter	' <i>Phalmatra siddhi adhyay</i> '	Best medication for <i>Basti karma</i>

According to the conventional science, scientific thinking is initiated with a good question. However, we have never realized that the text *Charak Samhita* has itself begun with a good question as described in *ayurvedaawataran* in first chapter. Exactly similar to the modern day Conferences the *acharyas* were sitting at a place and the discussion started.

They made an observation that *Aarogya* (Health) is the sole mean to achieve the four life's objectives i.e. *Dharma* (virtue), *Artha* (wealth), *kama* (gratification) and *Moksha* (emancipation). Diseases destroy the health and indirectly destroying the means to achieve *Dharma*, *Artha*, *Kama* and *Moksha*; humans are being affected on a large number by various diseases. And then a question is asked that "What is the solution to cure or to treat these diseases?"<sup>6</sup> This is the scientific question which initiated the research that turned into a whole system of medical science called *Ayurveda*.

As the scientific methodology is explained in the modern science, in a very similar way the scientific approach by *Ayurveda* towards this problem is mentioned in *Charak Samhita* as follows:

1. Congregation of *rishis*: Near *Himalaya*
2. Identification of Problem: What is the solution to cure or to treat these diseases?"
3. Experimentation & Discussions: *yuktita*: The *chikitsa* and *vididha parishad* mentioned in *charak samhita*.
4. Documentation: *agnivesha* documented all that was explained by *atreya punarvasu*<sup>7</sup>.
5. Approval prior to publication: documentation of *agnivesha* was approved by *rishis* and published<sup>8</sup>.

Second observation is about data presentation. In modern science IMRAD i.e. Introduction, Material & Methods, Result and Discussion is a format for the presentation of data. This is applied/used with the help of five steps.

- 1) Statement
- 2) Rational / Parameters of assessment
- 3) Experiment – Materials and Methods
- 4) Interpretation of Results
- 5) Conclusion.

A very similar format for data presentation i.e. *staphana*<sup>9</sup> is mentioned in *Charak Samhita vimansthana* Chapter 8<sup>th</sup>. This

format of data presentation is also applied with the help of 5 steps.

- 1) *Pratidnya* (Proposition) - Is the statement of what is to be proved.
- 2) *Hetu* (Reason) - Is the cause of knowledge.
- 3) *Drishtanta* (Instance) - It is that (example) which can be understood easily by both fools and also by scholars.
- 4) *Upnayana* (Correlation) – the one which correlates between the above first 3 points.
- 5) *Nigmana* (Conclusion)-it is the final result obtained.

This can be explained in following way with nice example.

- 1) Proposition – Combination of *Amalaki*(*Embllica officinalis*) and *Nisha* (*Curcuma longa*) is antidiabetic.
- 2) Reason – Because it lowers the blood sugar level.
- 3) Instance - Blood sugar lowering agents are antidiabetic e.g. Metformin
- 4) Correlation - Similar to Metformin, *Amalaki* and *Nisha* is also lowering blood sugar.
- 5)Conclusion- Therefore *Amalaki*(*Embllica officinalis*) and *Nisha*(*Curcuma longa*) together is an antidiabetic combination.

Thus scientific thinking in *Charak Samhita* and is very similar as in the modern scientific methods.

## CONCLUSION

In the history of modern science it is stated that repeated changes in paradigms were employed to explain reality. Modern scientific approach is often criticized for being unstable as the scientific theory changes every year, but changes in the paradigms only further strengthened the universal point. These paradigm shifts are not failure of scientific methods but are essential components in the process of gaining knowledge. Same paradigm shifts were observed in *ayurveda* which have

been knowingly or unknowingly ignored; but these types of changes have helped to strengthen and to keep alive *ayurveda* as a science over a period of thousands of years<sup>10</sup>; There are many such examples which can be considered as scientific methods e.g. *pramana* , *tantrayukti*, *adhyan adhyapan vidhi*,*sambhasaha vidhi* and many more which are scopes for further studies.

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