

### **Supplementary file 1.** Earlier attempts to solve the riddles in the *tridosha* paradigm

Pandit Shiv Sharma's scholarly attempts to solve the riddles in the *tridosha* paradigm have been discussed in the main paper. A few other significant attempts have been summarised and assessed here.

Gananath Sen Saraswati of Bengal insightfully suggested that the *tridosha* paradigm has an aspect that is practical as opposed to another aspect that is purely speculative. "You know that every theory is more or less a speculation. Unless it has a practical side, it has little value," he wrote in one of his essays [1]. While his writings fail to cogently sift the practical aspects of the *tridosha* concept from the speculative ones, the insight that the concept may be analysed in terms of its dual aspects remains valuable.

Bhaskar Govind Ghanekar of Maharashtra was a much-respected Ayurveda scholar who taught at the Benares Hindu University. His formal training though, was in modern medicine. In his classic commentary on *Sushruta Samhita*, Ghanekar clarifies several aspects of the *tridosha* paradigm. Calling the paradigm foundational to Ayurveda, he plainly admits the difficulty of reconciling *tridosha*-based physiology with current scientific understanding. He has no qualms in admitting that many parts of Ayurvedic physiology are outdated. However, intriguingly, he makes an exception for the *dosha* concept. He is in favour of retaining the concept even if it is somewhat incompatible with science. The foundational nature of the concept coupled with an implicit faith in the mystical intuitions (*divya-drishti*) that the sages supposedly possessed must have convinced Ghanekar to adopt this stance [2].

Perhaps the most impactful Ayurveda scholar who summoned the idea of mystical intuitions to justify the lasting relevance of the *tridosha* paradigm was G Srinivasa Murti of Karnataka. Like Ghanekar, he too was a respected doctor trained in modern medicine. His memorandum on *The Science and Art of Indian Medicine* formed part of two influential reports on the indigenous systems of medicine. C Dwarakanatha, his student, continued and fortified his legacy even further.

Murti believed that mystical insights that are supposedly achievable in deep yogic states unravel the mysteries of nature. Many a 'scientific theory' codified in Indian philosophical literature and Ayurvedic classics is a product of such yogic intuitions. So, it would be imprudent to dismiss such theories just because they are currently incompatible with science. "When one realises how fully some of these theories have been justified by the most recent events in modern science, one cannot help entertaining the feeling that, as some theories have already proved true, the same may happen in the case of others as well," Murti cautioned in his memorandum [3].

The argument from authority is the fallacy that characterises the views of Murti and Dwarakanatha. This fallacy and the enormous damage it has caused to Ayurveda have been detailed elsewhere [4, 5]. Instead of relying on reputable works of Indian philosophy authored by Hiriyanna and Radhakrishnan, they relied mostly on anecdotes and cherry-picked sources that were favourable to their authority-based worldview. Their take on the *Sankhya* concept of *tanmatras* is a case in point.

The *tanmatras*, in the *Sankhya* scheme, are evolutionary precursors of the five *mahabhutas* (earth, water, fire, wind, space). Ayurveda holds that *Tanmatras* underlie *mahabhutas* and *mahabhutas* underlie the three *doshas*. But what exactly are the *tanmatras*? How did the *Sankhya* teachers figure out that they are the precursors of the *mahabhutas*?

Hiriyanna answers this clearly and simply: “It is significant that the basis for this part of the doctrine is stated to be not inference but verbal testimony (*aptagama*) or the ipse dixit of the *Sankhya-Yoga* teachers.” [6] He also clarifies elsewhere that “the value of the science contained in the philosophical systems cannot be great now when experimental methods of investigation have advanced so much.” [6]

For the same questions on the *tanmatras*, Murti has a long and misleadingly convoluted reply:

*I may, however, mention that I discussed the concept of tanmatras with a profound encyclopaedic student (sic) of modern physics, my friend Prof. Yadunandan Mishra MA (Cantab), BSU (Lond.), who was very much interested to see the remarkable resemblances that do exist between the ancient Hindu and the modern western conceptions of the structure of the atom. He suggested to me that Tanmatric energy corresponded, in all probability, to the energy locked up in proton-electron nucleus of the atom (sic), and that, while the five types of Tanmatras of Panchamahabhutas that the Hindus speak of, has no definite counterpart in modern physics, an explanation for the distinction may, perhaps, be found in quantum theory of modern physicists. This is a very interesting and valuable suggestion, for the very word Tanmatra contains a definite suggestion of quantum or measure (matra)...It is not enough for Ayurvedists to speak of only one kind of quantum namely photon, we need, in addition, Akonsticons, Tactons, Gustons, and Olfactons, if these neologisms are permissible. If that day comes when advances in modern science would enable us to speak of these in terms similar to those we now speak of in regard to photons, then indeed, will have arrived the day when we can interpret, in the language of modern science, the teaching relating to this subject contained in an aphorism of Charaka, the father of Ayurveda. (vide Sutrasthana, Ch.8). [7]*

Murti's view has been articulated here in much detail because it has had a pivotal role in misrepresenting Ayurvedic concepts as sophisticated theories. Even to this day, the penchant for “discovering” quantum physics in Indian philosophical literature has not diminished.

Physiology explained in the ayurveda classics is primitive and sketchy. Their sincere quest for biological knowledge notwithstanding, the sage-physicians who authored the Ayurveda classics were unable to even roughly connect the kidneys with urine formation or the lungs with respiration. This being the case, one wonders how researchers still entertain the fantastical possibility of ancient sages having intuited the truths of the sub-atomic world!

## References

1. Saraswati GS. The scientific basis of Ayurveda. In: *Lectures of MM Gananath Sen Saraswati*. Varanasi: Chaukhambha Sanskrit Series Office; 2002.
2. Ghanekar BG. *Sushruta Samhita Shaareera-sthanam*. New Delhi: Meherchand Lachmandas Publications; 2022. p. 232
3. Murti GS. A memorandum on the science and art of Indian Medicine. Madras: Government press; 1923 pp. 20-21
4. Krishna GL. The history of a superstition. *Curr Sci*. 2019 Jul 10[Cited 2025 dec 25];117(1):9. Available from: <https://www.currentscience.ac.in/Volumes/117/01/0009.pdf>
5. Krishna GL. Confused mystification of ayurvedic concepts. *Indian J Med Ethics*. 2025 Jan-Mar;10(1) NS:63-63. <https://doi.org/10.20529/IJME.2024.083>
6. Hiriyanna M. Age of the systems. In: *Outlines of Indian Philosophy*. Delhi: Motilal Banarsidas; 2009[Cited 2024 Dec 25]. Part III. Available from: [https://archive.org/stream/outlinesofindian035857mbp/outlinesofindian035857mbp\\_djvu.txt](https://archive.org/stream/outlinesofindian035857mbp/outlinesofindian035857mbp_djvu.txt)
7. Dwarakanatha C. *Lectures on Tanmatras and Pancamahabhutas*. Varanasi: Chaukhambha Sanskrit Series Office; 2017. p.25