

Editorial

Proposed ban on mercury may hit Ayurveda adversely

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In recent times, public interest has shifted towards traditional medicines for various concerns. Ayurveda, the traditional medical system of India use raw material of plant, animal and mineral origin which is well-documented in traditional literature for their healing properties. Being used for over a long period, these medicines are acknowledged as safe, which is the ultimate proof for their non-toxic beneficial effects. However, the use of metallic preparations has raised concerns and debate in scientific community in the recent years.^[1] Such heavy metal controversies have tried to malign the reputation of Ayurveda at global levels. In addition to this, a few months back, United Nations Environment Program (UNEP) released a report “Mercury-Time to Act”, where imposing a ban on mercury for trade has been put forward.^[2] As India has no sources to procure mercury, chiefly depend on other countries. If, a ban is imposed, it definitely affects the ancient system of medicine in one or the other way.

Metallic preparations occupied a significant place in Ayurvedic pharmacopoeia and are routinely being practiced in different parts of Indian subcontinent since centuries. *Parada* (Mercury), one such metal is the inseparable part of Ayurveda and is used in the preparation of *Rasaushadhies* (Herbo-mineral preparations) such as *Makaradhwaja*, *Rasa Sindhura*, etc., Classical procedures such as *Shodhana* (purification), *Marana* (incineration), etc., make it safe (harmless) and render suitable for therapeutic use. Meticulous guidelines have been laid down in classical texts that one can refer while preparing *Rasaushadhies* (Herbo-mineral preparations), *Bhasma* (calcined metallic powders), etc.^[3] *Rasaushadhies* will be prepared in combination with other prescribed material in a rigorous and specified manner. These preparations are to be administered orally in specified quantities with great caution along with requisite *Anupana* (vehicles). Great emphasis has been laid on *Anupana* such as ghee, milk, honey, etc., while administering *Rasaushadhies*. *Anupana* is anticipated to play a key role in safety aspects of *Rasaushadhies*. In the absence of *Anupana*, adverse reactions are likely.^[4]

Absorption, distribution and excretion of mercurial compounds differ based on the chemical forms. The absorption of inorganic compounds of mercury in human body is poor on oral administration (10-15%), while organic mercurial compounds absorb >90% and hence are fatal. In addition, inorganic mercurial compounds do not cross the blood brain barrier or placental barrier.^[5] Many studies on Ayurvedic mercurial preparations have proven the chemical nature of the finished products to be inorganic (mostly sulphides).^[6] Studies on mercurial preparations like *Makaradhwaja* are reported to improve the quality-of-life and attributed with anti-stress activity.^[7] *Rasa*

Sindhura, another mercurial preparation is proven to increase life-span in *Drosophila* model.^[8] Further, traditionally prepared mercurials are proven to be different from industrial mercurials and supported safety of such medicines.^[9] Researches also proven that cinnabar is not converted into methyl-mercury by human intestinal bacteria.^[10]

Further, as well-known, Ayurvedic medicines are effective not due to a single active ingredient but, are due to combination of different types of substances that are responsible for therapeutic effects. Studies also established that, *Rasaushadhies* do contain traces of other elements in them, which possibly enter into the end product from specific procedures.^[11] Studies carried-out at Institute of Post Graduate Teaching and Research in Ayurveda, Gujarat Ayurved University on *Rasaushadhies* established safety of the products even at higher therapeutic doses. Hence, metallic preparations are comparatively safe to be administered, when prepared by following classical guidelines.

In most of the western studies, metallic drugs were subjected to chemical examination using standards applied in modern medicine, focusing only on the metallic content. The chemical forms of the metallic preparations were never thought to be attempted. Works on clinical or pharmacological aspects were never attempted by them.

Ayurveda considers a number of factors while administering a drug.^[12] Right drug at the Right dose by the Right route at the Right time for the Right person will always provide beneficial effects.^[13] Increased morbidity, risk of unwanted effects etc., have been repeatedly been attributed with irrational drug use.^[14] World Health Organization (WHO) also considers irrational use of medicines (overuse, underuse or misuse) as a major problem worldwide that results in widespread health hazards.^[15] This aspect has been considered by the pioneers of Ayurveda in detail in addition to the other possible ways by which toxicity, untoward effects can occur and provided all the guidelines to avoid the occurrence of such incidences. Even, if in any eventuality, some untoward effects are noticed due to non-compliance of code of conduct of the treatment, the treatment procedures for such conditions have also been prescribed.

Though a global ban on mercury is imposed by UNEP, it is proposed in another draft to exempt the ban for certain practices where there is no mercury free alternative, products used in religious or traditional practices etc. that will be discussed in Minamata Convention in October, 2013 at Minamata, Japan for finalization.^[16] We hope that the word “Traditional Practice” will allow use of mercury as medicine in Ayurveda.

Considering all these rising concerns, the below are the few recommendations that are felt:

1. Regulatory authorities and consumers are to be educated about the facts, so that one can differentiate the myth and reality.
2. Authorities have to recognize and realize the usefulness of the science, chemical nature of the finished products being administered in therapeutics.
3. Different committees and authorities involved with drug regulation may involve in formulating policies, and undertake guiding and monitoring activities related to rational drug use.
4. There is a need to develop a strong networking between sophisticated laboratories, scientists of biotechnology and Ayurvedic physicians.
5. The concepts and impact of different classical procedures are to be stressed at every possible training opportunity to the individuals of scientific profession. This will help in generating awareness.
6. Awareness among physicians of modern medicine regarding the benefit of Ayurvedic drugs as a replacement or adjuvant therapy.
7. Though, the quantity of mercury required by Ayurvedic industry may be very minimal in comparison to other industries, relaxation may be proposed on its use in Ayurvedic pharmaceutical sector.

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