

Lecture Series

Second World Ayurveda Congress (Theme: Ayurveda for the Future)—Inaugural Address: Part III

R. A. Mashelkar

National Chemical Laboratory, Pune, Maharashtra, India

The Traditional Knowledge Digital Library

That, ladies and gentlemen, is how the Traditional Knowledge Digital Library (1) came to be. As Dr Bhatkar told you, that is why, if you put 'Traditional Knowledge Digital Library' into Google, you are now one of 30 million plus hits. That is the magnitude of the transformation that has taken place. What we have done is to take Ayurvedic text, Sanskrit text and converted them into English, codified them and created a traditional knowledge resource classification. This has then been linked to international patent classification. Why is it important to have done so? Because we discovered that, of the 10 000 international patent classification subgroups, only one was for traditional medicine. How can you have only one subgroup out of 10 000 for such a rich system? Now, thanks to our Indian effort, there are 200 subgroups. I am sure, that as other systems come in, that figure will become 2000.

I am very happy about the Traditional Knowledge Digital Library. In June, the paper went to the cabinet, which approved it in its entirety. They decided that it will be CSIR who decides on access of the Traditional Knowledge Digital Library to the International Patent Offices. Now what will happen: there will be a connection between the Sanskrit sloka in the Ayurvedic text and the personal computer of the patent examiner in the US patent office. Then, if he does 'Turmeric', 'wound healing' and 'powder', he will not get a blank screen. Instead, he will get all the knowledge in a language he understands, because it has been codified and classified. There would not be any wrong patents given.

Ayurveda as a World Medical System

As Prof. Bodeker and I were saying, this is the way traditional knowledge systems have to penetrate. As he

has wisely and rightly pointed out, the same thing must happen for the world's medical regulatory systems. He is absolutely right. Only with this kind of recognition will we be able to fulfil our dream. My dream is not about Ayurveda as one of a number of traditional medicine systems; my dream is for Ayurveda to be recognized as a *universal medical system*. It is entirely possible, but if we do not set about these things, we will not be able to achieve that dream. That is basically the point.

In my judgement, the Traditional Knowledge Digital Library will serve as a bigger purpose that is part of this. It will integrate widely scattered and distributed references in traditional knowledge systems in retrievable form. It will act as a bridge between traditional and modern knowledge systems. Availability of that knowledge in retrievable form in many languages will give modern research a major impetus in both India and the rest of the developing world, which will then also be able to get involved in innovative research. So there is a huge benefit to be had. It will raise the profile of Ayurveda so that all doctors will recognize its value, the world over.

Science-based Ayurveda Products

Lastly, I want to mention two or three things that are close to my heart. The first is that we now have an opportunity to create new products, science-based, Ayurvedic products, for which I see four different types of use.

1. Those to be used for minor ailments like dysphagia, unpleasant taste, anorexia, etc.
2. More specific products like detoxifiers, toners, resistance builders and rejuvenators for longevity. Both these sets of preparations are likely to be available over-the-counter, OTC.

3. Those for support therapy where the therapeutics may be administered together with allopathic preparations. Traditional medicines may even partially replace allopathic ones. These will most probably be prescribed by existing medical practitioners who will be using combo-therapy to take advantage of the synergy between the two sets of preparations for patients' overall benefit. In combo-therapy, use will be made of bio-enhancers, detoxifiers, toners and specific therapeutic agents, such as those in group 2, to accelerate recovery. Similar use may also be made of them at hospitals based on existing systems. With time, such combo-therapy may become acceptable not only just in India, but also universally.
4. Treatment of diseases of old age for which these systems have already shown a great degree of efficacy: diseases of old age are of increasing concern in the West, and include various forms of cancer, AIDS, osteoporosis, arthritis, Alzheimer's, Parkinson's disease and obesity and a whole range of others. There are opportunities, opportunities and opportunities.

Then there is detoxification. Although detoxification is practiced in other traditional systems of medicine, to my mind Ayurveda has the most elaborate procedures. Mostly, mild detoxification procedures are practiced through the digestive track and the skin. They can be practiced even without a prescription for maintenance of good health. If molecularly defined detoxifiers could be generated, along with their mechanisms of action, this mild therapy could become extremely popular with health conscious people, not only just in India, but also throughout the world. With the use of molecularly defined and mechanistically understood products, there arises the possibility of using plant extract fractions not presently used for therapeutic purposes. Such new herbal preparations could significantly increase the number of available therapeutic preparations of herbal origin.

Questions of Toxicity and Mechanism

Now I want to talk about bhasmas. In addition to molecularly defined, and mechanistically understood, non-toxic herbal fractions containing only a few molecules, there are other important preparations, which are unique to Ayurveda: the bhasmas, which are made from mixtures of metals or minerals. Most are traditionally calcined in sealed earthen containers by burning cow dung cakes, or else in furnaces. The final products are fine powders about 50 microns, or less in diameter. They use elements like lead, tin, iron, arsenic etc. Nearly 10% of Ayurvedic products are bhasmas, I understand.

Most of the elements used in these preparations have been classified in standard scientific textbooks as toxic. For example, lead in any concentration is described as

toxic; not only that, it is known to accumulate in various tissues. Bhasmas, however, are considered fast acting healing agents and are used quite freely, particularly Siddha preparations. No toxic effects have apparently been reported from them; but to make them internationally acceptable, it will not only be necessary to show that they are efficacious and non-toxic, but also to define their physicochemical characteristics by accurate scientific measures. In this regard, you may find the work being done at the National Chemical Laboratory by Dr Rajiv Kumar of interest. He is looking at what is happening in bhasmas at the atomic and molecular levels. Very, very interesting findings are coming out (2).

My last question is: 'How do we get scientists interested in such research?' Dr Kumar, for example, is busy developing catalysts for Indian and international companies. How do I get scientists like him changing to looking at bhasmas and such things, coming from that kind of field? To my mind, that presents a big challenge. The first need is to expose our best minds and our best scientists to the accumulated wisdom of Indian systems of medicine, including Ayurveda. We must do that, and this is a terrific platform where it can happen. The way Dr Bhatkar described the program, there are going to be plenty of opportunities to do so. There is no doubt that there are enormous opportunities for doing focussed, basic-cum-applied research. Mechanisms need to be elucidated in such areas as:

- actions of bhasmas
- detoxification
- reversal of ageing
- bio-enhancers and how molecular synergism occurs.

All these offer numbers of scientific challenges. All are going to be very valuable.

Conclusion

I think what we need is not only just a meeting like this, but also a meeting of minds. That is extremely important: creating borderless minds is important, but at the same time breaking borders is important. What is urgently required are changes in attitude of scientists, traditional practitioners and industry on one hand, and special policy initiatives by the government on the other. Only then will we be able to create that Golden Triangle.

Finally, I would like to reiterate some of the more important points made by Valiathan (3). There is no point in angry knee-jerk reactions, as, for example, when somebody like Saper writes in the *Journal of the American Medical Association* (4) about heavy metal content of 70 samples of Ayurvedic herbal medicines and the whole world reacts. Canada reacts and we jump angrily. We should not be doing so. Nor, for example, when the House of Lords in the UK classified Ayurveda

as a herbal therapy. Again there was a reaction to those papers on traditional medicine in *New England Journal of Medicine* in 2002 (5–7), which did not refer to Ayurveda, but did refer to everything else; and when our scientists replied, their letter was not even accepted (8). We do not have to react.

What we should do is put our own house in order (3). How do we do that? First, encourage clinical research in Ayurvedic institutions; second, create a complete Ayurvedic pharmacopoeia of one or even two thousand products, how many does not matter, but it must be complete; third, create an effective surveillance system, like the post-market surveillance systems for other traditional systems, including support from modern laboratories spread all over India; fourth, we must carry out multi-centric trials of Ayurvedic biology; fifth, we must establish a presence in international scientific journals. There is no point in shouting; there is no point in getting angry. We must have a very strong presence in the world's scientific journals, something *eCAM* has already supported by nominating seven new Editorial Board members from India (9).

We first built IIT's i.e. Indian Institutes of Technology. We already have IIM's i.e. Indian Institutes of Management. Then we built IIIT's i.e. International Institutes of Information Technology. We keep on building them. What should we be building? We should not worry about IIIT's anymore. They are doing fine. What we should worry about are IIIM's. What is an IIIM? An International Institute of Integrative Medicine: that is where our great strength is. We should create and demonstrate to the rest of the world our own power, what it is, and where it lies.

I would like to end by thanking you once again for giving me this opportunity to give this inaugural address. I believe history is being created. The building housing the Indian National Science Academy had never had

Ayurvedic practitioners enter its halls. I am well-known for breaking such rules and traditions, so as President of the Academy (one of the many hats I wear), I broke that rule. Two years ago we had them all together, and created a great dialogue with Rustum Roy and the many others who came. I think there are new beginnings, and a new hope for this great country of ours, India. Thank you very much.

Acknowledgement

The Author wishes to acknowledge the enormous help that Prof. Alex Hankey gave to enhance the value of this contribution. His deep insights were as valuable as his uncanny eye for detail.

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Received January 17, 2008; accepted January 31, 2008