A Visionary—Aryavaidya Mayaram Sundarji (1856-1928):
Initiatives for Ayurveda

Ashok DB Vaidya*
Research Director, Kasturba Health Society-Medical Research Centre, Mumbai, 400 056, India
E-mail: ashokdbv@gmail.com

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Aryavaidya Mayaram Sundarji (1856-1928) was a visionary who took early initiatives for Ayurveda- integrative approaches to incorporate modern scientific advances in Ayurveda. He shared his profound scholarship, astute clinical experience and leads for research through books, reviews, articles and letters in Ayurvedic journals like Vaidya Kalpataru, a century back. His experiential data on antimalarial, anti-rabies and hepatoprotective remedies offer a vast potential for discovery of new natural drugs through the paths of Ayurvedic Pharmacoepidemiology, Observational Therapeutics and Reverse Pharmacology. Nyctanthes arbor-tristis L. for malaria, Calatropis procera Alton for rabies-prevention and Picrorhiza kurroa Royale ex Benth. for hepatitis have been followed up as leads by research. But organized new drug development with state-of-the art transdisciplinary research is awaited. His vision and views for scientific research and documentation in Ayurveda was much before his time. The recommendations he published in Ayurvedic journals for the advancement of Ayurveda are relevant even now. The emphasis he laid, in early twentieth century, on clinical studies of safety and efficacy and statistical considerations vis-à-vis the natural history of a disease were prophetic for evidence-based Ayurveda. There is a need to study and review the documented experience of eminent vaidyas of the past to identify innovative trails left unattended.

Keywords: Mayaram, Ayurveda, Reverse pharmacology, Malaria, Rabies, Hepatitis.

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It has been my good privilege to have received the invaluable Ayurvedic notes, papers, articles and books of my great grandfather-Aryavaidya Mayaram Sundarji Vyas (MSV)\(^1,2\). He was a man of renaissance, in India, when allopathy was being transformed into modern medicine in Europe. The British rulers were busy proving to their subject race that everything Indian was almost tribal - labelling Ayurveda as folklore. MSV was aware and appreciative of the western medical advances and appealed to vaidyas to imbibe that scientific temper, while studying Ayurvedic classic texts\(^3\). There have been several requests to publish MSV’s works. But I was overwhelmed by his voluminous heritage. I saw photographs of MSV and Jadavji Acharya (Fig.1), in the 1920 AD volume of Vaidya Kalpataru\(^4\). Being currently involved with an English translation of - “Siddha Yoga Sangraha” by Jadavji Acharya, I felt nudged to share some of MSV’s notes and publications, relevant for new drug research.

Life sketch of Mayaram Vaidya

Mayaram, the eldest son of Sundarji Purushottam Vyas, was born in 1856 at Nana Bhamodara-a small village in the erstwhile Kathiawar (now Saurashtra of Gujarat). His father was a farmer but doubled as a priest as well as a cook for the major feasts at the local prince’s mansion. Unlike his father who was an orthodox Brahmin, MSV was drawn early to Dayananda Saraswati (1824-1883) – a great reformer and Vedantist- who founded Arya Samaj. Dayananda was also an inspiration for India’s first war for freedom against the British in 1857, by his call for Swarajya as ”India for Indians” – in 1876, a slogan later taken up by Lokmanya Tilak. MSV also anticipated the concept of Ayurvidya, a term coined by Tilak\(^5\), by adopting safe and effective allopathic drugs in a fusion mode. He had learnt Ayurveda from a Jain Sadhu- Gorji, who also shared with him a rare manuscript of an erudite Vaidya, from Kachchh, Motisagar Gorji\(^6\). MSV had a remarkable fluency in Sanskrit and avidly studied all the authentic texts of Ayurveda. With his knowledge of the medicinal plants and skills in manufacturing Ayurvedic drugs he started practice at Savar Kundala, in 1880 A.D.

\(^{*}\)Corresponding author
In the very first year of practice he had earned ₹225/-. His income increased to ₹310/year, with a saving of ₹73/- only. After a decade, for better prospects, he decided to move to a bigger town and shifted to Jetpur. The income, as he has noted down, jumped up to ₹750/- in the very first year (1890) with a saving of ₹475/-. His reputation, as a vaidya, and a scholar and as an enlightened citizen, grew steadily. He established an Ayurvedic Pharmacy named Sri Dhanvantari Aushadhalaya, which manufactured remedies marketed nationally and internationally. There was then peace as well as prosperity in his life. MSV had hoped that his son would return to Jetpur and join in the practice and develop the pharmacy. But that was not to be. That role had to be played by my father Babubhai, a freedom fighter. My grandfather PMV became a respected and popular doctor in the medical services of the erstwhile Vadodara state. MSV wrote extensively on Ayurveda, social reforms and the need for Indian independence. He was a voracious reader and learnt five languages on his own. He had a lifelong habit of waking up at 3:00 a.m. and read for 3 hrs in an uninterrupted manner. He was reputed to be highly industrious. People used to beat money on someone finding MSV idle for even ten minutes! He prepared all his medicines himself, carved out his rubber stamps, printed his handbills/advertisements for the pharmacy and made pill boxes and parcels for the distribution of the Ayurvedic medicines, in addition of his clinical work. MSV was indeed a supreme example of a multi-tasker with integrity, sincerity, humanity and compassion. His stature in the town and Gujarat steadily grew, as an eminent vaidya and a visionary for integrative healthcare. The entire extended Vaidya family imbibed and cherished the MSV spirit of studiousness, enquiry, the fight for the freedom of India, a commitment to social justice and probity in the public life.

In the year 1928 he fell seriously ill for the first time. During his last moments when his daughter Raliyatben asked him whether she should keep the photograph of Maharshi Dayanand in front of him. He, a lifelong iconoclast, smiled and asked his brother, “Trikam, I have taught you Vedas. Will you recite the Richas with me?” Both the brothers chanted holy Vedas in unison. The atmosphere got charged as if a Rishi was entering Samadhi in a sacred Ashram. And MSV breathed his last. He left a grand vision and a huge legacy of Ayurvidya!

**Ayurvedic drugs for malaria**

Malaria was rampant in Kathiawar and constituted a major bulk of MSV’s clinical practice. MSV knew the intricacies of pathogenesis and management of Visham Jwara described in Ayurveda and Unani, as evident in his overview of Jwara. The selected hints, leads and remedies available in this erudite overview are important specifically for Reverse Pharmacology for new antimalarial discoveries. Table 1 has the list of plants and formulations, some which have been taken up for antimalarial activity. Other less studied plants deserve more attention for basic and reverse pharmacology. The plants are as follows: *Butea frondosa* Roxb. ex Willd., *Datura metel* Danert, *Enicostemma littorale* Blume, *Caesalpinia bonducella* Roxb., *Fumaria indica* (Hausskn.) Pugsley, *Aristolochia bracteata* Lam., *Thevetia nevifolia* Juss. ex A.DC, and *Dalbergia sissoo* Roxb.

Fig. 1 — Vaidya Mayaram Sundarji Vyas (L) and Vaidya Jadavji Trikamji Acharya (R): Two great leaders of Ayurvidya

<table>
<thead>
<tr>
<th>Formulation/plants</th>
<th>Dosage</th>
<th>Anupan</th>
<th>Advantages</th>
<th>Ref. No.</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Mrigashringa- Jwarankush</em></td>
<td>0.5-1.5 gm six hourly</td>
<td>With honey</td>
<td>Rx Pneumonia</td>
<td>10</td>
</tr>
<tr>
<td><em>Argemone mexicana</em> L. ghana</td>
<td>0.5-1 gm b.d.</td>
<td>With black pepper</td>
<td>Helps dysuria</td>
<td>11</td>
</tr>
<tr>
<td><em>Berberis aristata</em> DC. ghana</td>
<td>250 mg six hourly</td>
<td>With black pepper</td>
<td>Helps appetite</td>
<td>12</td>
</tr>
<tr>
<td><em>Azadirachta indica</em> A. Juss. leaves</td>
<td>Extract of 20 gm b.d.</td>
<td>With honey/sugar</td>
<td>Helps weakness</td>
<td>13</td>
</tr>
<tr>
<td><em>Calotropis procera</em> (Ait.) R. Br. bark</td>
<td>Powder 125 mg b.d.</td>
<td>With ginger/curds</td>
<td>Relieves body ache</td>
<td>14</td>
</tr>
<tr>
<td><em>Nyctanthes arbor-tristis</em> L. leaves</td>
<td>10 gm, t.d.s.</td>
<td>With honey/sugar</td>
<td>Well being</td>
<td>15,16</td>
</tr>
</tbody>
</table>
The *pathyas* (compatible diet and rest), prescribed for malaria, are early fasting for 2-3 days and then light meals of rice, *mung*, soups, etc. The patient was advised rest initially and gradually increase exertion based on his energy levels. MSV has stated that fasting is indicated in new *Tridosha Jwara* and not in mild to moderate fever without complications. In the same reference, MSV has cited a couplet from the manuscript—*Keshav Kalyana Vaidyak*, “Aama udar beech hota jamai, jwarakara jantu machchhar janai” The stanza means that the undigested residues (*Aama*) accumulate in the abdomen, caused by the fever-inducing germs borne by mosquitoes. MSV has described the discoveries by Laveran and Ross on mosquito-transmitted nature of malaria. He also cites in *Gujarati* a quotation ascribed to the former governor of Madras. The verbatim translation is as follows, “Our doctors have discovered that the mosquito bite causes fever. But the knowledge of this fact is there in an old book of *Ayurveda* I had received from a Buddhist in Ceylon. Hence, rather than describing our doctors as discoverers we should call them as disseminators of the finding.” MSV is reluctant to ascribe any priority without the dating of the manuscript or a look at the Ceylonese book. MSV also wrote for Vaidyas an excellent brief article on the plasmodial etiology of malaria, the types of malarial fever, the lifecycle of the malarial parasite, the measures of control, prevention and how to avoid a recurrence.

MSV designed a fusion formulation of antimalarial plants with quinine, to reduce the side effects of quinine and enhance relief too. As there were no patents at that time, the ingredients were kept secret by the key members of the family, who used to help in making the medicine. MSV had mail order agents in several cities, towns and villages. He has noted down, in his diary, a list of addresses of more than 500 agents and patients, who had been dispatched this *Rama-Bana Goli*. The ingredients and the precise amounts of *Rama-Bana Goli* are described. Many patients were treated with clinical response and good tolerability.

**Ayurveda and rabies**

In the year 1920, there were some significant communications on rabies (hydrophobia) in Vaidya Kalpataru. On 11th August 1919, Gaikwad wrote a letter as follows: “The remedy for the rabies that I have will not disappear with my demise. I have already shared the details of it with some of my relatives. I have watched hundreds of effective *Ayurvedic* drugs vanish from my country due to the secrecy approach rampant with *vaidyas*, who carry the valuable knowledge with them to their graves. At the Pasteur Institute (Paris), I told a scientist, ‘I have a remedy for rabies. You sacrifice hundreds of animals for your vaccine. Why don’t you inject rabies virus in a single rabbit? I will treat the animal with my drug. And if, under your observations, you are convinced that the rabbit remains rabies-free, I request for a certificate to that effect.’ When he asked me to tell him the name of the remedy, I refused. Similar incident occurred at London too. I have helped innumerable persons bitten by rabid dogs. I did not publish the remedy as the remedy works when given right at the outset of rabies. Only recently, I had the opportunity to treat established rabies in a man and two oxen with good results. I knew the remedy from a *sadhu* whom I saw successfully treating rabies.”

Gaikwad informed the Medical Officer, Vadodara, to pursue the matter further.

Ardeshar Doctor responded to Gaikwad’s letter in Vaidya Kalpataru, “After reading Gaikwad’s letter, I realized that even my not publishing the remedy for rabies, which I know for many years, is a great blunder. The remedy is as follows: When in summer, the shrubs of *Calatropis procera* Alton, are in full bloom, dig out the roots and dry them. The bark is ground and sieved for a fine powder. The doses given are 6, 4 and 2 grains p.o. for the adult, child and infant respectively, on a fasting stomach, for 40 days. In the same year (1920), MSV wrote in support of the aforesaid remedy by Ardeshar Doctor, “The plant has been mentioned in *Anupan Manjari* and other books, with some variations of the usage of the plant parts, e.g. latex with oil. MSV wrote, “In my 40 yrs of practice, I have known its usage by others too. I would like to share it with all *vaidyas*. At Bhamodara the ox of Patel Harakha was bitten by a rabid dog. Fifteen days later, the ox developed rabies. The animal was treated by Patel’s neighbour Govind Kunbi, who knew the experienced remedy from a Gorji, his mentor. I watched the ox recover from rabies. The remedy used was the juice of the leaves of *C. procera* Alton, 40 ml, *Datura metel* Danert, leaves’ juice 3 ml and oil 100 ml. The mixture was fed through a bamboo tube to the ox for the first dose. Later, half of that dose was given for the next two days. I saw the rabid ox recover completely.” The formulation for humans, by Gorji Motisagarji from his manuscript, was cited, “The powder of bark of the root of *C. procera* 15 gm, the powder of the leaves of...
receptors

competitive blockade of the virus at the cholinoceptive

Datura

historical example of prophylaxis by receptor blockade.

anti-cholinergic plants for rabies would be the first
diseases like hepatitis, cirrhosis, fatty infiltration, etc.

Hepato-protective plants in Ayurveda

In India, Ayurveda is used widely for common liver
diseases like hepatitis, cirrhosis, fatty infiltration, etc.

MSV in an article (1910) and in his notes have
described the remedies used in Ayurveda for liver
disorders. Table 2 lists the plants/formulations and
relevant activities and the references on further recent
work carried out on these items are cited.

There are other remedies mentioned by MSV
which need observational studies: (1) the juice of the
roots of Raphanus sativus L. (2) ashes of all the five
parts of Achyranthes aspera L. mixed with 4 times
water, the root of Moringa oleifera Lam., Eclipta alba
L. juice, (3) a combination of Aloe vera L., Calatropis
procera Alton, Tephrosia purpurea L. and Acorus
calamus L., (4) juice of Asparagus racemosus Willd.
and Albizia lebbeck L. Benth. MSV has also
mentioned the use of Navasara - ammonium chloride
in jaundice, as practiced by other vaidyas too. MSV
has stated that Aselio - Lepidium sativum L. has been
found to be useful in liver disorder. This has not been
a commonly reported use. Only recently it was shown
by Egyptian scientists that L. sativum protects against
the liver damage produced by paracetamol.

Articles/Notes on medicinal plants

An immense curiosity about plants drove MSV to
visit farms, forests and wild lands in search of novel
medicinal properties. His work was extensive in the
field of medicinal plants. For the present article, we
will cite only selected references of plants with
experienced usage by MSV. Table 3 lists these hints
and hits which deserve a closer scrutiny for new drug
discovery research through Reverse Pharmacology.

There is a need to conduct comparative survey of
the recorded experienced remedies of eminent
Vaidyas and evolve a Usage Index (UI) for listing the
most common Ayurvedic drugs used, all over India,
for several unmet medical needs. Those drugs topping

<table>
<thead>
<tr>
<th>Formulation/plants</th>
<th>Dosage</th>
<th>Anupan, etc.</th>
<th>Features</th>
<th>Ref. No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tinospora cordifolia (Willd.) Miers ex Hook. F.</td>
<td>Paste 15 gm b.d</td>
<td>Black pepper</td>
<td>Help in ascites</td>
<td>26</td>
</tr>
<tr>
<td>Luffa echinata Roxb.</td>
<td>Soaked fruit 2-3 drops nasally</td>
<td>Ghee</td>
<td>Yellow rhinorrhea</td>
<td>27</td>
</tr>
<tr>
<td>Picrorhiza kurroa Royle ex benth.</td>
<td>Root powder 250 mg t.d.s.</td>
<td>Honey</td>
<td>Liquefies bile</td>
<td>28,29</td>
</tr>
<tr>
<td>Azadirachta indica A. Juss.</td>
<td>Inner bark (12 gm) extract t.d.s</td>
<td>Ginger, pepper</td>
<td>Relieves fever</td>
<td>30</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Plants</th>
<th>Formulation/Dosage</th>
<th>Indications</th>
<th>Ref. No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Musa × paradisaica L.</td>
<td>Stem juice 10 ml X 4</td>
<td>Tuberculosis, leprosy, eczema, malaria</td>
<td>32</td>
</tr>
<tr>
<td>Argemone mexicana L.</td>
<td>Extract topically X 4</td>
<td>Conjunctivitis, leucoma, psoriasis</td>
<td>33</td>
</tr>
<tr>
<td>Cannabis sativa L. syn. C. indica Lam.</td>
<td>Extract 250 mg s.o s.</td>
<td>Dysmenorrhoea</td>
<td>34</td>
</tr>
<tr>
<td>Psoralea corylifolia L.</td>
<td>Oil 10-15 drops with milk</td>
<td>Initial stages of leprosy, hair growth</td>
<td>35</td>
</tr>
<tr>
<td>Aegle marmelos Correa ex Roxb.</td>
<td>Fruit jam 10-20 gm X 2</td>
<td>Irritable bowel syndrome, sprue</td>
<td>36</td>
</tr>
<tr>
<td>Tephrosia purpurea Pers.</td>
<td>Asarva 10-20 ml X 2</td>
<td>Chronic urticaria, infertility</td>
<td>37</td>
</tr>
</tbody>
</table>
the list should then be theoretically and literature-wise analyzed as to their indications and safety for assigning a value of Potentiality Index (PI). Within 2 yrs such an effort may provide a data base that may help to support drug discovery research from the most promising plants.

**Vision and views for advancement of Ayurvidya**

There were several efforts around the beginning of the twentieth century on how to revive Ayurveda to its past pristine glory. The polarization was emerging amongst Vaidyas whether only to stick firmly to the traditions or to usher in a renaissance in Ayurveda with the fresh infusion of scientific/biomedical advances taking place globally. The latter group was relatively in a minority, led by Gananath Sen and some physicians of modern medicine. Tilak’s clarion call for Ayurvidya, as an open and growing art-science, was responded to by only a handful of people. The very year Tilak passed away, in 1920, MSV wrote a thought-provoking article\(^{38}\). His opening sentence reads, “In this twentieth century, many advances have occurred in all matters and are still occurring. Outstanding discoveries continue to astonish us. Under such circumstances, if we, Indians, were to stay fixed in the old status quo, then we will lag behind. We will not be developed. Hence, neglecting the law of economics we shall not profit from new advances. We must understand that in Aryavaidya too that the situation is similar and we need to progress with time. Then he enumerated and explained his suggestions for a rapid progress of Ayurvidya (Table 4)\(^{39-47}\).

Several of these suggestions were followed up only after many decades; some are still being debated intensely. The path of integration of Ayurveda and modern biomedical sciences is not at all easy. But to meet the challenges of the global burden of diseases it is indeed worthwhile to evolve carefully “Integrative Approaches for Health” so valiantly narrated in a recent book by Patwardhan et al.\(^{48}\).

**A plea for Ayurvedic therapeutic research**

In absence of massive databases consequent upon experiential surveys of Ayurvedic pharmacoepidemiology\(^{39}\) as well as the lack of well-organized analysis of the recent (past century) notes, papers, books and oral history of huge experience of great vaidyas, the scepticism of the reductionists will continue. The present initiative of recording the experience and articles by MSV is the first step in the direction of consensual validity and bedside drug re-discoveries by observational and reverse pharmacology studies\(^{50-54}\). But at present there is no organized support to follow up the hints, hits, leads and remedies well-recorded by great Vaidyas during their lifetimes.

Ayurveda does not rely totally on drugs for the management of diseases. The remedies are integrated into a matrix of management wherein all other non-drug measures are taken to reverse the pathogenetic factors which disturbed the health of the individual patient. There is a need to understand and approach drug research in terms of the nature of relevant determinants of the degree of therapeutic response. This is where lifelong documented experiences of great vaidyas can guide us. For a research renaissance, we have to revisit with reverence and insatiable curiosity the lives and works of past masters in Ayurveda. It is recommended that Vaidya-Scientists revisit such works of therapeutic wealth. A special appeal is made to those vaidyas who have a lineage of generations of Ayurveda in their family to organize such a sharing of their heritage for advanced research for drug discovery with new Biology.

The immense opportunities opened up by the ongoing revolution in biology have been stated well by Charlier, “These constantly changing trends in biological research have of necessity called for ever more diversified methodological development, which has made it possible to investigate and measure biological parameters hitherto unobtainable, especially in humans. Even more specialized and polyvalent

\begin{table}[h]
\centering
\begin{tabular}{|l|l|l|}
\hline
Suggestions & Remarks & Ref. No \\
\hline
Deploy higher resources in health & Government, philanthropists, trusts & 39 \\
Modern manufacture of drugs & Economical, safe, machines, chemistry & 40 \\
Subject-wise new integrated texts & Updated knowledge, Ayurved education & 41 \\
Establish degree colleges/journals & Universities, States, excellence in courses & 42 \\
Ayurvedic hospitals, dispensaries & Degree-holders, government, philanthropy & 43 \\
Equip, record-keeping, storage & Nutrition, hygiene, sanitation, aesthetics & 44 \\
Adopt effective Western remedies & Fusion formulations, foreign plants & 46 \\
Research facilities, conferences & Infrastructure, scientists, herbaria, museums & 47 \\
\hline
\end{tabular}
\caption{Suggestions to advance Ayurveda}
\end{table}
equipment has thus been perfected, making it possible to combine in a single exploration a whole mass of data which, up to now, could only be gathered separately. Ayurvedic Pharmacoepidemiology, Observational therapeutics, Reverse Pharmacology, Ayurgenomics, Systems Ayurveda and Cellular Ayurveda have been recently evolved to avail of such immense opportunities. For these to be fruitful, it is vital to apply state-of-the art clinical, imaging and laboratory techniques to the bedside biodynamic phenomena in humans. The vast heritage of Ayurveda would then lead us to the forefront of a new understanding of human biology, in health and disease by the development of integrative Ayurveda.

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