



## Exploring traditions

Alain Touwaide

After the boom of pharmacological research during the 1950s, mainly as a result of the screening technique, the identification of active molecules, their reshaping by means of pharmaco-chemical drug design, and the creation of extremely efficacious and successful medicines, the pharmaceutical world sought a new source of inspiration. Such biota as the tropical forest, a quantity of plants credited with highly powerful therapeutic activity, seemed to be a resource.

As a sort of shortcut, research began interviewing the individuals who, in pre-modern societies, retained the secret of the herbs. Ethnobotany and ethnopharmacology, interested in the traditional knowledge and therapeutic uses of plants of human groups not yet entered into modernity, had hopes that the practice of plants coming from the dawn of Humankind and handed down from one generation to another, one century to another, and one culture from another, and now detained by a handful of healers qualified as traditional by Western medicine, could not only provide the modern world with a cure, if not a prevention to its sores, but also reconnect modern and post-modern societies with their roots and their environment. The recipes and therapeutic arsenal of a wide range of non-Western or non-Westernized cultures were scrutinized. The results of that large-scale enterprise were published worldwide and also stored in such a powerful tool for research as the NAPRALERT database, which can be consulted through the Internet.

In the wave of this renewed interest for traditions, recipe books from the past seemed also to be a source to be exploited in the search for the medicines of the Third Millennium. In 1996 the book *Prospecting for drugs in ancient and medieval European texts: a scientific approach* (edited by Bart K. Holland and published in Amsterdam by Harwood Academic Publishers) approached the topic, suggested some methods, and shown the potential of such field with some case-studies. Such strategy was recently highlighted again and its method strongly reaffirmed in the paper *Techniques: bioprospecting historical herbal texts by hunting for new leads in old tomes* by Eric. J. Buenz, David J. Schnepfle, Brent A. Bauer, Peter L. Elkin, John M. Riddle and Timothy J. Motley (*Trends in Pharmacological Sciences* 25(9) (2004): 494-498).

No significant research program going in this direction has been launched, however, even though thousands of old books, mostly still in handwritten form, have been preserved from the past and still wait to be consulted and integrated into pharmacological research. The reasons are understandable: a research of this kind is not simple and not limited, in any case, to the computerization of ancient texts - whatever they are - and their exploitation, possibly also by means of powerful software of computational linguistic. Cutting-edge interdisciplinary research is necessary. Highly qualified scientists need to be associated, not only from the fields of botany, pharmacognosy, pharmacochemistry, drug design and others, but also from the humanities: scholars trained to locate manuscripts hiding in library collections, to read their sometimes cryptic writing, to correctly interpret the texts maybe in collaboration with historians of culture, to translate them into modern languages, and to consult with specialists of the many scientific disciplines involved in the research.

The problems above cannot be better illustrated than by the case of the ancient and medieval cultures of the Mediterranean and the Middle-East, particularly because the flora of the area is among the most diverse in the world. Innumerable handwritten books on materia medica, some of which are

wonderfully illustrated with color plant representations, still lie in libraries and have not even been properly identified. It is no surprise if sometimes a manuscript previously unknown shows up, as was recently the case with a copy of the Arabic translation (*fi-hayuli-al-Tib*) of the most important manual of pharmacology from Antiquity: *De materia medica* by the Greek physician Dioscorides (1<sup>st</sup> cent. C.E.) (see the paper presented by F. Ghasemlou, "On the materia medica of Dioscorides and a report about a copy of it in Tehran" at the 2<sup>nd</sup> International Congress on Traditional Medicine and Materia Medica held in Tehran, October 4-7, 2004). After ancient documents have been brought to light, the plants need to be properly identified according to modern taxonomy, and their uses correctly interpreted (particularly because ancient descriptions of medical conditions do not correspond to contemporary nosological entities). Then, and only then, pharmacological research can start, hopefully leading to the experimentation in laboratory of the properties the plants and other materia medica are credited with.

The discoveries of such a research strategy are many, even though they might not be spectacular. Sometimes results are surprising, as they show not only that ancient uses might be efficacious, but also - if not above all - that they have been faithfully kept through the centuries by what is now called the traditional medicine. An example of this kind of small discoveries is *Ecballium elaterium* (L.) A. Rich. The plant is currently used in Turkey by traditional healers to treat sinusitis. Now such indication already appears in Dioscorides, who most probably did not discover it, but received it by a tradition antedating him and probably going back far in the history of Humankind.

The advantages of such a research strategy are many. Of course, relying on the experience accumulated by Humankind through the centuries, if not the millennia, dramatically cuts the time of laboratory research to arrive to the production of an efficacious medicine. Also, from an economic viewpoint, production of medicines on the basis of past knowledge and with local natural resources sharply reduces the costs and alleviates the budget of public health services, something that is particularly appreciated in emerging countries. More interesting, biological activity of natural products is not limited to one or a couple of actions, but is a broader spectrum that includes agents susceptible to compensate for the possible side-effect(s) of the main component(s).

A certain sense of urgency is required, not only because the books that contain the ancient therapeutic knowledge of Humankind are disappearing (because of the passing of time, natural catastrophes or also wars and conflicts), but also because the necessary fields of expertise to take advantage of their content are rapidly being lost. The latter include, but are not limited to, the very awareness of the existence of such books, the knowledge of ancient languages, the aptitude to decipher and translate their texts effectively, and, last but not least, the ability to correctly interpret their scientific contents, without anachronisms but also without a rapid dismissal of what is too often considered to be quackery because it does not correspond to what is considered now to be science.

In the future pharmacological research should be a comprehensive discipline devoted not only to the analysis of substances of whatever nature supposed to be provided with physiological activity, but also to the research of primary material likely to contain information to be submitted to laboratory analysis, including data from the past.

*Alain Touwaide, PhD*  
*Fellow of the Linnean Society, London*  
*Fellow of the International Academy for the History of Pharmacy*  
*Life Fellow of the Washington Academy of Sciences*

*Historian of Sciences*  
*Department of Botany*  
*National Museum of Natural History*  
*Smithsonian Institution*  
Washington DC, USA atouwaide@hotmail.com