Use of Herbal Medicines in Wound Healing: A Perspective Paper

Terence J. Ryan, DM, FRCP
Emeritus Professor of Dermatology, Oxford Brookes University, Oxford, UK

Healing of chronic lower extremity wounds is a global problem, especially in the developing world where it is often only folk and traditional medicine that can be afforded. In the structured health services of the developed world, there are usually a wider range of possible therapies. In India, traditional medicines flourish in parallel with Western systems, and those who treat wounds may use the expertise of more than one system. Ayurveda is a traditional system that has evolved in India over centuries using especially native plant sources as remedies. Like many Asian systems, its theoretical basis concerns balance and energy in the individual. In this perspective paper, the author advocates awareness of plant products available for wound healing and a study of the extent of their utilization. They must be developed for safe use and their efficacy reviewed, taking into account cure well-being and patient satisfaction as well as cost. Developing a list of products and classifying them appropriately is a beginning for such studies.

Key words: wounds, classification of herbal medicine, Ayurveda

Chronic wounds of the lower extremity continue to be a therapeutic challenge; all efforts to minimize this challenge should be encouraged by the community. Wound research in Western societies using carefully understood principles of clinical science has focused on developing drugs, dressings or skin covers, or devices for treating patients with chronic wounds. Such products are tested, and those declared safe for use are available to the practitioner. These include wound dressings that use the concept of moist wound healing, 4-layer bandages that deliver sustained compression for the treatment of venous ulcers, and so on. These developments notwithstanding, there are many unmet needs. Have other systems of medicine—for example, the Indian or Chinese systems—any solutions to offer the practitioner of Western medicine? In both China and India, there exist traditional systems of medicines that use plant products but without the same levels of purification known to Western medicine. In this perspective paper, this author argues that wound management and the practitioner of Western medicine will benefit from learning about other medical systems.

Correspondence should be sent to: Terence J. Ryan, Professor, Oxford Brookes University, Oxford OX3 0BP, UK; e-mail: oxfordwound@aol.com.

DOI: 10.1177/1534734603253691
© 2003 Sage Publications

INDIAN PLANT MEDICINES

In the review by Biswas and Mukherjee in this issue of *IJLEW* on "Plant Medicines of Indian Origin for Wound Healing Activity: A Review," the authors list 164 plants and discuss some research findings in 12 of these. In recent years, the discipline of wound healing has excited the scientist, and many laboratories have examined wound healing in all its aspects. At the same time, the science of ethnopharmacology has developed and gained academic respect.[1] The paper by Biswas is limited to those plants used in Ayurvedic or traditional medicine in India. There are many other systems of medicine in India, as well as local folk traditions used for healing wounds. The above list of healing plants omits, for example, *Hypericum hookerianum* from southern India that was recently investigated by Mukherjee and Suresh.[2] It also fails to mention studies concerning the plant Aloe that have come from different countries.[3-5] These studies were favorable to the use of Aloe, although Schmitt and Greenspoon[6] reported that a preparation of Aloe delayed healing. Biswas and Mukherjee present studies reporting good biochemical

Downloaded from ijl.sagepub.com at PENNSYLVANIA STATE UNIV on September 17, 2016

findings without any extended studies either in patients or in wound models. This lack of balance may leave the reader experienced in Western medicine, which is referred to in India as biomedicine or allopathic medicine and which is currently driven by evidence-based medicine, dubious of the potential value of Indian plant medicine products.

Is clinical research applicable to Ayurvedic medicine? A view espoused by some experts is that research is applicable to Western medicine but not a feature of other systems of medicine. However, Khan and Balick[7] indicated that of the 166 plants, most used in Ayurvedic practice, 43% have had at least one human study and 62% have had one or more animal studies. Ayurveda derives some of its knowledge from ancient oral traditions, and these still exist. Not unexpectedly, where traditional practitioners as well trained as most Ayurvedic doctors are few and far between, folk tradition will be found. Where these have been recorded, as in Nepal,[8] the list of wound healing agents is long and includes only some of those used in Ayurveda. From this perspective, subjecting Ayurvedic medicine to the same rigorous research as Western medicine seems a near impossible task. Balick and Cox[9] reported that only 1% to 3% of drugs listed in Western pharmacopoeia are intended for use in the skin and for wounds; by comparison, at least one third of herbal remedies are for such use. Is it reasonable to expect the same degree of authenticity to be applied to the latter product as is known for the former? Both traditional and Western systems of medicine for wound healing suffer from lack of resources and awareness. These need advocacy and wider publication for relevant research to be pursued. In broad terms, the relevant headings for consideration are utilization, safety, and efficacy.

UTILIZATION

If a medicine is widely and frequently used, then every system of medicine should know about it as it becomes a matter of public health. This was the rationale for the *American Journal of Public Health* to devote an entire issue to alternative and complementary medicine.[10] India has a population of 1 billion people. Ayurvedic medicine fully supported by the government of India is provided for its population by approximately 400,000 practitioners who have received in-depth training for more than 5 years in medical schools that now provide some exposure to the paradigm of Western medicine and its research technology. In terms of public health, costs are an important consideration. This applies to Ayurvedic medicine as well as the Chinese system of medicine that is available to an even greater population than that in India and is supported by a government policy of integration. The theory underlying Asian medicine systems is entirely different from the paradigm on which the system of Western medicine has developed. Asian medicine is less concerned than medicine with single refined chemical agents but more concerned with balance and energy. This may make the comprehension of Asian systems difficult for a proponent of Western medicine to encompass.[11,12]

SAFETY

No system of medicine is entirely safe; Western medicine accounts for a huge number of admissions into hospital because of side effects. Some of the risks are inherent in the medication prescribed; however, the experience of the practitioner also plays an important role. The risks of Ayurvedic and other systems of medicine are largely determined by the inadequacy of the training of the practitioner especially when exported to other countries. The Central Council for Research into Ayurvedic and Siddha concerns itself with standards in a pharmacopoeia for Ayurvedic formulations.[13]

EFFICACY

In Western medicine, the drive of evidence-based medicine has been to determine efficacy; in wound healing, this is usually focused on rate of healing. The evidence of efficacy is derived from randomized, controlled trials, a methodology that has not been used in Ayurvedic or other traditional systems of medicine. I argue that other clinical parameters such as patient satisfaction, improvement of well-being, improved or faster healing, as well as the number of wounds that attain healing are part of the objective that is efficacy. This broader view of efficacy is important if the management of chronic lower extremity wounds is to progress.

Many Western medicine experts study wound models in the laboratory using a petri dish for studies at cellular levels or in an animal model simulating some but not all clinical conditions. Such studies have their uses; scientists are well aware that in vitro studies are mere simulations and that the results are rarely extrapolated into clinical circumstances. However, with respect to sepsis and inflammation, it is worth remembering that plants that survive viruses, bacteria, insects, or sunburn achieve this by virtue of their constituent products. Given that stages in wound healing are dependent on antisepsis, antioxidants, and anti-

Downloaded from ijl.sagepub.com at PENNSYLVANIA STATE UNIV on September 17, 2016

inflammatory agents, it is likely that plant products have an untapped amount of potential. This "model" that is the plant has evolved over thousands of years and needs to be better understood within the framework of classical clinical science.

THE ACTIVE PRINCIPLE

The scientist likes "cause and effect" to be always simple to demonstrate and is therefore uncomfortable with a "soup" of unknown agents. Those practicing clinical medicine globally tend to be sympathetic to poly-pharmacy and to the possibility that there is a synergism balancing both activators and inhibitors existing in a "soup." In Asian systems of medicine, polypharmacy has a huge variability in dosage. Prescriptions may change from day to day or need to be taken for a very long term. This is unlike the 5- to 10-day prescription used in Western medicine that is easily understood.

DISCUSSION

In the field of wound healing, there are several unknowns; this includes the wound itself. In such a complex environment, it is difficult to conclude about safety and efficacy of therapeutic agents. Such agents available to traditional systems of medicine should not disappear from use before they can be fully assessed. It is relevant that there are some threatened by overuse and poor husbandry.

Classification is very important; it is linked to identification and, therefore, to safety. Kareem[14] for the Foundation of Revitalisation of Local Health Traditions classified 1613 plants that were known in India under 12,699 alternative names. In the paper by Biswas and Mukherjee in this issue, the Banyan tree *Ficus bengalensis* is referred to as *Vad* and *Bot*, which do not appear in two comprehensive lexicons.[14,15]

Problems of classification also apply to disease. In Table 1 in Biswas and Mukherjee's paper, there is a mention of erisipelas that is often equated to cellulitis. There is little consensus in European literature with respect to this term. There are other examples such as uropathy and refrigerant that will confuse the reader.

Finally, when considering access to these ancient remedies, one should note that they are locally available, whereas most of the new Western knowledge and new agents are not available to the majority of the developing world. Good science should also take note of access and cost to the patient. In India, Western medicines for wound healing are unlikely to be better than medicines of Indian origin, if the former are unavailable. The onus is on the wound scientist and practitioner to determine the availability of cheaper, safer, and patient-satisfying agents and to test their efficacy.

REFERENCES

1. Houghton P. The role of plants in traditional medicine and current therapy. J Altern Complement Med 1995;1:131-44.
2. Mukherjee P, Suresh B. The Evaluation of wound-healing potential of *Hypericum hookerianum* leaf and stem extracts. J Altern Complement Med 2000;6:61-70.
3. Heggers J, Kucukcelebi A, Listengarten D, et al. Beneficial effects of aloe on wound healing in an excisional model. J Altern Complement Med 1996;2:271-8.
4. Heggers JP, Elzaim H, Garfield R, et al. Effect of the combination of aloe vera, nitroglycerine, and L-name on wound healing in the rat excisional model. J Altern Complement Med 1997;3:149-54.
5. Choi S, Son B, Son Y, et al. The wound-healing effect of a glycoprotein fraction isolated from aloe vera. Brit J Derm 2001;145:535-45.
6. Schmidt J, Greenspoon J. Aloe vera wound gel is associated with delay in wound healing. Obstet Gynecol 1991;78:115-7.
7. Khan S, Balick M. Therapeutic plants of Ayurveda: a review of selected clinical and other studies for 166 species. J Altern Complement Med 2001;7:405-516.
8. Bhattarai N. Traditional herbal medicine used to treat wounds and injuries in Nepal. Trop Doct 1997;27 Suppl 1:43-7.
9. Balick M, Cox P. Plants, people and culture: the science of ethnobotany. Scientific American Library New York; 1996:228.
10. Silenzio V. Editorial: what is the role of complementary medicine, alternative medicine and public health? Am J Public Health 2002;92:1561-668.
11. Zysk K. Medicine in the Veda Motilal. Delhi: Banarsidass Publishers; 1996:311.
12. Majumdar A. Ayurveda: the ancient Indian science of healing. New Delhi: Wheeler Publishing; 1998:324.
13. Central Council for Research in Ayurveda and Siddha. Pharmacopoeial standards for Ayurvedic formulations. Delhi: Government of India, Ministry of Health and Family Welfare; 1987.
14. Kareem M. Plants in Ayurveda: a compendium of botanical and Sanskrit names. Bangalore: Foundation for Revitalisation of Local Health Traditions; 1997:244.
15. Compendium on Medicinal Plants, Sri Sankara College of Ayurveda Tiruchirappali-620 009 Tamilnadu South India; 2001.

Downloaded from ijl.sagepub.com at PENNSYLVANIA STATE UNIV on September 17, 2016