

## Editorial

---

# eCAM: An Emerging Linkage with Ethnopharmacology?

Edwin L. Cooper

Laboratory of Comparative Neuroimmunology, Department of Neurobiology, David Geffen School of Medicine at UCLA, University of California, Los Angeles, CA 90095-1763, USA

---

When thinking about congruence, several synonyms come to mind: similarity, correspondence, equivalence, resemblance, analogy, comparison; certainly the antonym: (dissimilarity) does not. So let us compare two relevant, seemingly parallel ideas, concepts especially in the discipline of integrative and complementary medicine. In recent discussions, it proved useful to examine in some depth, what may seem superficial but that probably represents a true and future linkage or congruence. A quick reading of published works does suggest congruence perhaps not immediate, but clearly interdependence and sometimes overlap. Perhaps for one of the two, they dig like an archeologist, discover like a paleontologist whereas the other reaps the harvest of those diggings and seeks to understand what all the pieces mean and how they fit together: one discovers shards, the other glues them together. And so it goes, ethnopharmacology and evidence based approaches can link and share characteristics.

That kind of analogy emerged and was best revealed at the *XX Symposium of Medicinal Plants of Brazil and the X International Congress of Ethnopharmacology in Sao Paolo*. Questions posed by Michael Heinrich (United Kingdom) and that of participants in his workshop noted a flavor of ethnopharmacology that in my opinion often coalesces with the evidence based component. Two questions: can one identify ethnopharmacological treatments for metabolic problems? Or, does this affect what evidence-based approaches seek to do? Of course it does. Evidence-based approaches should readily capture the essence of a well characterized plant or animal extract derived from long years of practice in a particular culture

and then subject that well characterized extract to an easily designed model for further rigorous experimentation: *in vitro*; animal models; well defined clinical trials, that are empirical. In a sense, one discipline discovers whereas the other experiments and seeks to provide information through the use of ideally randomized, clinical trials that withstand all the rigors of evidence based approaches. These then are dependent on the discoveries and information transfer provided by the dedicated ethnopharmacologists—they discover and CAM puts the discoveries to work. They are mutually dependent; there is a linkage!

Introducing the pertinent work in Sao Paolo, according to Alves and Rosa (1–4) (Federal University of Paraiba) ‘The World Health Organization (WHO), estimates that as many as 80% of the world’s more than six billion people rely primarily on animal and plant-based medicines’. Starting from the viewpoint of bioprospecting as a CAM Frontier, I proposed the following. The healing of human ailments by using therapeutics based on medicines from animals or ultimately derived from them is known as zootherapy. Zootherapy has a marked geographical distribution and substantial cultural origins. Despite their importance, analyses of the therapeutic use of animals and animal parts have been neglected, when compared with plants (both are referred to as herbals which are usually defined as plants!). However within complementary and alternative medicine, zootherapy has been explored from the viewpoint of evidence based (5), because the literature appears ‘glutted’ with products derived from plants (6). Both sources of natural products provide extensive sources of new CAM approaches that will emerge as important for future applications, including compounds isolated from marine microorganisms and phytoplankton, green algae, brown algae, red algae, fungi and certain well-known marine and terrestrial animals: sponges, coelenterates, bryozoans, molluscs, tunicates,

---

For reprints and all correspondence: Edwin L. Cooper, Laboratory of Comparative Neuroimmunology, Department of Neurobiology, David Geffen School of Medicine at UCLA, University of California, Los Angeles, CA 90095-1763, USA. Tel: +1-310-825-9567; Fax: +1-310-825-222; E-mail: [ecam@mednet.ucla.edu](mailto:ecam@mednet.ucla.edu)

© 2008 The Author(s).

This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/2.0/uk/>) which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

echinoderms, earthworms and leeches (7,8). There has been an emphasis on new compounds (677 in 2002), together with their relevant biological activities, source organisms and country of origin. Thus syntheses that lead to the revision of structures or stereochemistries have been included (114), and any first total syntheses of a marine natural product (9–13). Using animal products as components of bioprospecting has implications for medicines the environment, economy, public health and culture.

What was reported in Sao Paulo that may serve to clarify more about congruence? I recently chaired a brief assembly in Sao Paulo: 'Use of medicinal plants around the world' where there was substantial enthusiasm. According to Hajdu from the University of Szeged, Hungary, Provenir is a semi-isolated Indian community in the Bajo Paragua Indian Reservation of the Bolivian Amazon. Altogether, 135 plants from the 'traditional pharmacopoeia' of Porvenir were listed and collected, among them 62 species have been utilized to treat diarrhea, dysentery, gastric-ache, gastric ulcer, gastritis, vomiting, constipation, appendicitis, liver diseases and are also used to help in weight loss. Moreover, based on the frequency and consistency of usage, some species appear suitable for further development into licenses, cheap, locally available medicine. Of the species, 25% are considered good subjects for research of biologically active new natural products. Similarly, Barboza presented a complete checklist of the medicinal flora and an analysis of its diversity as observed in Argentina. In another approach, this time to veterinary practice, Cesio and colleagues from Uruguay reported a different concern. Helminthiasis is a major animal health concern in livestock production, causing important economic losses. The resistance against commercially synthetic antihelmintics forces the search for alternative therapies. They concluded that the ethnobotanical approach for the selection of plants was successful, as at least 75% of tested plants were active. They yielded potential raw materials for veterinary phytopharmaceuticals.

Finally, Giovannini and Heinrich from London presented interesting conclusions on *Xki yoma* (our medicine) and *xki tienda* (patent medicine) as an interface between traditional and modern medicine among the Mazatecs of Oaxaca, Mexico. They concluded that when there is an investigation of a complex pluralistic medical system, an approach that goes beyond the externally imposed dichotomic categories of traditional and modern medicine can be extremely useful to enlighten us on other dimensions that underlie the local use of medicines.

## References

1. Alves RR, Rosa IL. Why study the use of animal products in traditional medicines? *J Ethnobiol Ethnomed* 2005;1:5.
2. Alves RR, Rosa IL. From cnidarians to mammals: the use of animals as remedies in fishing communities in NE Brazil. *J Ethnopharmacol* 2006;107:259–76.
3. Alves RR, Rosa IM. Biodiversity, traditional medicine and public health: where do they meet? *J Ethnobiol Ethnomed* 2007;3:14.
4. Alves RR, Rosa IL. Zootherapy goes to town: the use of animal-based remedies in urban areas NE and N Brazil. *J Ethnopharmacol* 2007;113:541–55.
5. Cooper EL. Complementary and alternative medicine, when rigorous, can be science. *Evid Based Complement Altern Med* 2004;1:1–4.
6. Roch P. In: Cooper EL and Yamaguchi N (eds). What can we learn from marine invertebrates to be used as complementary anti-biotics? *Complementary and Alternative Approaches to Biomedicine*. New York: Kluwer Academic/Plenum Publishers, 2004, 391–404.
7. Cooper EL, Ru B, Weng N. In: Cooper EL and Yamaguchi N (eds). Earthworms: sources of antimicrobial and anticancer molecules. *Complementary and Alternative Approaches to Biomedicine*. New York: Kluwer Academic/Plenum Publishers, 2004, 359–90.
8. Roch P Alain Beschin, Bernard E. Antiprotozoan and antiviral activities of non-cytotoxic truncated and variant analogues of mussel defensin. *Evid Based Complement Altern Med* 2004;1:167–74.
9. Blunt JW, Copp BR, Hu WP, Munro MH, Northcote PT, Prinsep MR. Marine natural products. *Nat Prod Rep* 2007;24:31–86.
10. Werner EG Müller, Heinz C Schröder, Matthias Wiens, Sanja Perovic-Ottstadt, Renato Batel, Isabel M. Müller traditional and modern biomedical prospecting: part ii—the benefits: approaches for a sustainable exploitation of biodiversity (secondary metabolites and biomaterials from sponges). *Evid Based Complement Altern Med* 2004;1:133–44.
11. Cooper EL. Bioprospecting: a CAM frontier. *Evid Based Complement Altern Med* 2005;2:1–3.
12. Cooper EL. Drug discovery, CAM and natural products. *Evid Based Complement Altern Med* 2004;1:215–7.
13. Cooper EL. CAM, eCAM, bioprospecting: the 21st century pyramid. *Evid Based Complement Altern Med* 2005;2:125–27.