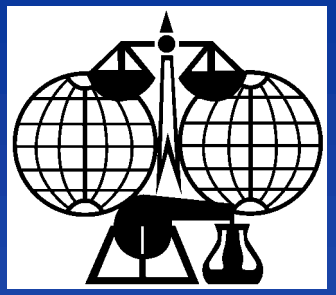


# TRAINING AND RESEARCH IN MEDICINAL CHEMISTRY IN DEVELOPING COUNTRIES

Poster presented at the
IUPAC Congress/General Assembly
*July 2001*

# SUMMARY

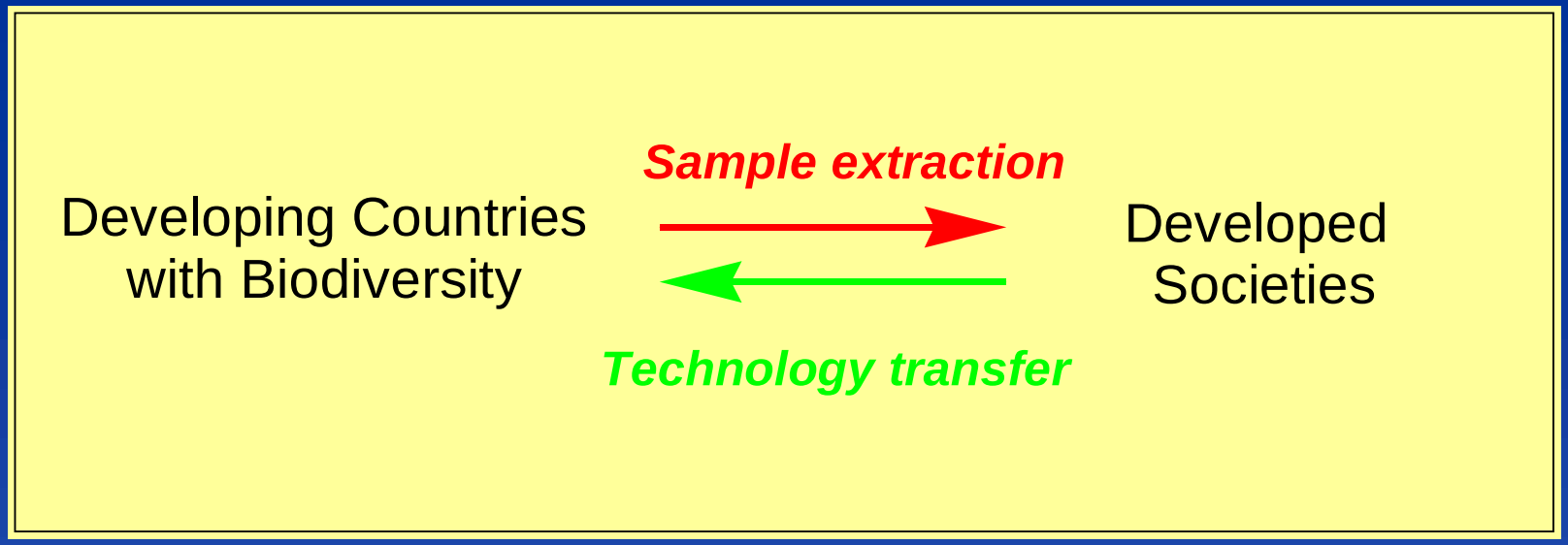
This presentation discusses the role that the discovery of new medicinal agents has in the development of societies, as well as in the conservation of biodiversity in terms of the work carried out on natural products.

Also included are several recommendations for countries that are currently in search of their own scientific and technological development of medicinal agents.

# INVERTING THE MODEL

Regardless of administrative or political considerations, companies and centers with high levels of development need to be brought together with those that lack them by means of joint projects within the broad field of chemistry and, especially, within the distinct area of biologically active compounds.

Various modes of interaction can be proposed; the one most often used is one wherein samples of materials from developing countries with biodiversity are extracted and transported for study in developed societies. We make a case for an inversion of this traditional model, namely that of offering technology to the countries with biodiversity so that they themselves may carry out the necessary developmental work.




Contributions to chemical research on bioactive molecules that biodiversity-rich, developing countries then may be able to return can be ascertained on the basis of:

*Strengths:*

- Biological material, both of animal and vegetable origin, with demonstrated or potential activity
- Traditional knowledge concerning biological activities, linked to plants or animals

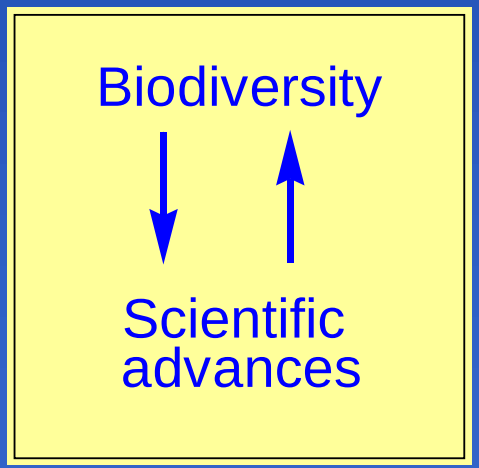
*Weaknesses:*

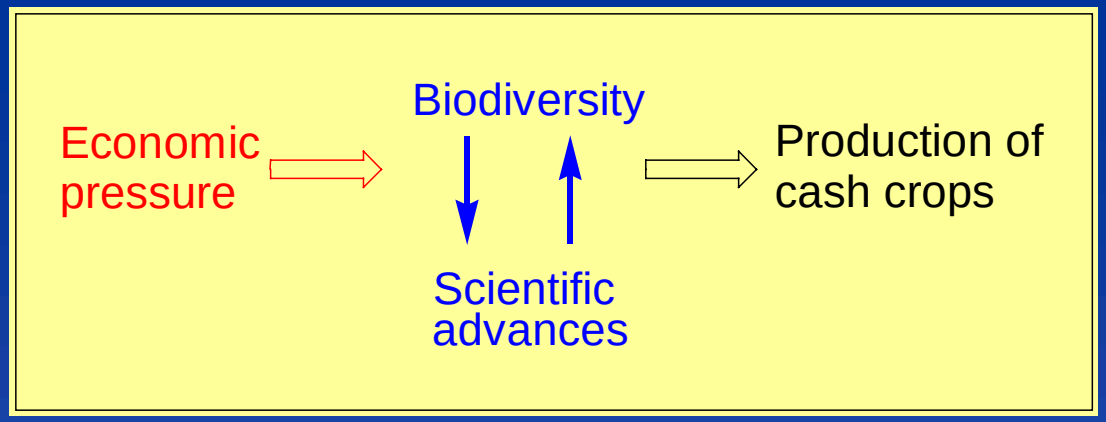
- Infrastructure deficiencies that cause difficulties for conducting scientific research

# MEDICINAL CHEMISTRY AND BIODIVERSITY

Realizing that biodiversity can be lost by man-made cataclysms such as the construction of large public works or by natural catastrophes such as fires, volcanoes etc., medicinal chemistry can function as a great ally by emphasizing the ecobalance between life and its surroundings, plants and microfauna, and other relationships.

*Medicinal Chemistry also recognizes the symbiotic interaction between native communities and cultures as a foundation and wellspring for potential discoveries.*






The relationships between biodiversity, opportunity, and the structuring of various alliances become especially important relative to the immediate financial needs of a developing country.

*Biodiversity and Medicinal Chemistry must find a way to collaborate and optimize opportunities based on new alliances and technology transfer that is not based upon pure economics. Enormous benefits can accrue in the fields of education, scientific research, and innovation when an approach other than immediate financial gain is taken.*

# MEDICINAL CHEMISTRY AND OWNERSHIP OF NATURAL RESOURCES

*The protection of knowledge, within the context of plants with biological activity, cannot be easily accomplished via patents, and it becomes necessary to search for further avenues. From the standpoint of fairness, answers may be found during the transfer of knowledge.*

In countries with emerging economies, biodiversity and related activities constitute "green gold." For this reason, at times, the governments assume quick, financially driven policies that can sometimes be contrary to ecorelationships. Thus, both parties must be prepared to adopt longer-range planning considerations into their decision-making processes.

*Fairness and equal opportunity must be assured to protect the discoveries made by any society.*

# ADDITIONAL RECOMMENDATIONS

*Strengthen international relationships based on research projects, particularly including countries at different levels of development.*

*Strengthen international relationships between scientists and the authorities responsible for research in various countries.*


***References:***

1. Research and Training in Medicinal Chemistry in South and Central American and Sub-Saharan Africa.
   *Chem. Int.* 21: 65-69 (1999)
2. Medicinal Chemistry in the Development of Societies, Biodiversity and Natural Products.
   *Chem. Int.* 23: 39-44 (2001)

# Survey in South and Central American and Sub-Saharan Africa

To assess the present situation, a survey was developed that covers four distinct areas:

- **teaching of medicinal chemistry**
- **research in medicinal chemistry**
- **opportunities for development of research, teaching, and training in the field of medicinal chemistry**
- **cooperation in practical training, teaching, and research in medicinal chemistry**

Surveys were distributed by mail to recipients in Chile, Peru, Nigeria, Cameroon, Zimbabwe, Ethiopia, and Madagascar. Others were carried out directly by way of interviews, including in Argentina, Bolivia, Brazil, Colombia, Costa Rica, Cuba, Chile, Ecuador, Guatemala, Panama, Paraguay, Peru, Dominican Republic, Uruguay, and Venezuela.

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