QSAR: RATIONAL APPROACHE TO THE DESIGN OF BIOACTIVE COMPOUNDS

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QSAR: RATIONAL APPROACHE TO THE DESIGN OF BIOACTIVE COMPOUNDS

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Edited by

C. SILIPO AND A. VITTORIA

Dipartimento di Chimica Farmaceutica e Tossicologica, Facoltà di Farmacia,
Università degli Studi di Napoli, Napoli, Italy

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Preface

Corwin Hansch's classic work which appeared in 1962 can be taken as a turning point in the study of chemical structure–activity correlations. In an elegant treatment of work in this area, the encompassing term "quantitative–structure activity relationships" (QSAR) has been suggested and formal approaches for studying the interrelationships of sets of data have been outlined. Quantitative structure–activity relationships today constitute a subject which has seen enormous growth in the past decade. Techniques which have been developed and used heavily outside of Medicinal Chemistry are now used by those working with structure–activity relationships. These techniques employ powerful computers, molecular graphics systems and more or less sophisticated softwares; they may be of enormous assistance to those trying to structure the large data bases resulting from the massive efforts in drug research and related sciences. QSAR, in fact, is a means for structuring a developing area of research and is most valuable in the complex decision making involved in new moves in an ongoing problem. Although QSAR techniques have been developed mainly toward the optimization of activities of known sets of analogs, recent methodologies seem to possess enough generality for modeling new chemical entities.

After the preceding meetings on the same subject at Prague (1973), Suhl (1976), Budapest (1979), Bath (1982), Bad Segeberg (1984), Portorose (1986) and Interlaken (1988), the 8th European Symposium on QSAR was held during the period September 9–13, 1990 in Sorrento (Naples), Italy, with the attendance of about 300 participants from over 30 countries. The programme of the Symposium was drafted with the aim of involving the interest of medicinal chemists, pharmacologists and all other scientists concerned in some way with the quantitative approaches of the interface between chemistry, physical–chemistry and biology/pharmacology.

The scientific programme (plenary lectures, short oral contributions and posters) covered the following topics:

- QSAR: General aspects
- Parametrization in QSAR: Hydrophobic and other descriptors
- Computational methods in QSAR
- Computer assisted molecular modeling and receptor mapping
- Peptide drug design
- QSAR applications in medicinal chemistry: Concepts and methodologies
- Correlation analysis in toxicology, pharmacokinetics and environmental sciences

As can be seen, the programme covers a wide range of disciplines, tools and ideas. For these reasons we have chosen the title "QSAR: Rational approaches to the design of bioactive compounds" for this volume of the proceedings. It would seem inappropriate to mention here examples taken at random; this volume, in fact, encompasses the most recent advances and applications in the field of quantitative approaches to bioactive compound design.

We would like to express our heartly thanks to the International Scientific Advisory Committee and to the Organizing Committees for their great help and encouragement. Our thanks go also not only to the various institutions and drug companies for their financial support, but also to all of the participants for their cooperation.

C.Silipo and A.Vittoria

Opening Address

Ladies and Gentlemen, I have the honour of introducing Professor Corwin Hansch, although I am well aware that he has not the slightest need of an introduction.

Perhaps a brief historical note will not be out of place.

I would like to remind you of the words of Paul Ehrlich, father of chemotherapy, when he was defining the problem of developing aetiological pharmacotherapy, at the turn of the century. On conditions for the not purely formal study of relations between chemical structure and biological activity, he said: "For too long we have overlooked the fact that another important link must be inserted between chemical constitution and pharmacological action, a link which controls the relationships between the pharmacodynamic agent and the substratum to be affected. This bond, the distribution moment (das distributive Moment), is therefore the combination of the cell and tissue properties and the drug properties".

The great phatologist's insight has a worthy follower in Corwin Hansch's approach. Professor Hansch's lucid grasp of the question has proved most efficacious, both in theoretical and in experimental terms. The real value of his work lies in its decisive contribution to understanding the relationships between the physical properties of bioactive substances and biological activity. But Hansch's success has not been due solely to the kind of chemical-physical parameters he introduced in his renowned equation. It is due to another parameter as well, a human parameter, enthusiasm. Professor Hansch has transmitted his enthusiasm to many young people, from different countries, whom he has welcomed in his laboratory. On returning home, they made his philosophy known, and frequently founded important research centres. The joint chairmen of this Symposium, Professors Silipo and Vittoria, are an obvious example.

A glance at the conference programme shows the enormous proliferation on his basic ideas. In fact, Professor Hansch is going to talk about new perspectives in Quantitative Structure-Activity Relationships (QSAR).

It is with great pleasure that I now call upon Professor Hansch to address the meeting .

P. Pratesi

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