

Impact of integration: Pharmaceutical medicinal chemistry and pharmacology

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EDITORIAL

Recently, in all years, institutions of higher education across nationally and internationally, have recognized that publishing is the core of the academic career attaining international ranking of the institution. That is why, for these institutions to build a high standard academic reputation put emphasis on interdisciplinary and multidisciplinary research projects related to drug design, development and targeted delivery systems. On the other hand, academicians and researchers seek through professional development and profile publications seek to boost the professional careers. In area of drug design and development both pharmaceutical medicinal chemistry and pharmacology act as a complement to each other, eventually the research will have impact and make a change in various areas such as public health, environment, industry etc.

Medicinal chemistry is the branch of chemistry that explains how drugs act and shows how they can be designed and developed.

Medicinal chemistry is a multidisciplinary science involving comprehensive knowledge in organic chemistry, physical chemistry, biochemistry, physiology, pharmacology, microbiology, mathematics. Pharmacology is concerned with the study of drug action on the cell, tissue, organ or organism. The aim of drug design and development is to produce efficacious and highly selective (and hopefully specific) pharmacophores and then find ways of delivering them, through ADMEphore design and development, to the site of required biological action. Elimination of the drug from the body is the next step in drug design and development. This can also be controlled by implementing the appropriate approaches of chemical functional group inclusion in the drug molecule.

In drug discovery linking the concepts of pharmacology and medicinal chemistry together, many information and data can be generated, such as:

- Predict the physicochemical properties of a drug (medicinal compound) by inspecting the drug chemical structure.
- Describe how the pharmacokinetics properties of a drug can be modified by modifying some physicochemical property upon modifying some chemical functional group.
- Predict the mode of binding of a drug to its receptor in the body based on the structures of the drug molecule and the

receptor and accordingly how pharmacodynamic properties can be influenced.

- Predict the major metabolic pathways of medicinal agents and the expected activity, or lack of it, or toxicity of the major metabolites and how chemical modifications can be made to avert toxic metabolite formation and how active metabolites can be developed into drugs.
- Explain the effect of stereochemistry of a drug molecule on its binding to receptor(s) and how pure isomers can be used to advantage and when isomeric mixtures can be used
- Suggest chemical modifications on drug molecules and predict the effects of those modifications based on the principles of drug design.
- In academic institution, many studies have reported that integration and collaboration between pharmacology and medicinal chemistry courses increase students 'understanding, satisfaction and success. Students acquire deep knowledge regarding the link between the identification of biological and chemical compounds and molecules' functional groups, molecular structure and physical, chemical and technological properties and the biological effects of the compounds.

In clinical setting the coining of pharmacology and medicinal chemistry drug delivery principles would result in the required therapeutic outcomes of medicines. Advantages of this integration resulted in solving many issues and challenges in all fields of the pharmacy profession: community, hospital and industrial practices.

Therefore, researchers, academicians and scientists they are looking for validation of all their results and disseminate their findings to the public in the research community. Pharmacology and medicinal chemistry journal will address various concepts and principles on techniques of organic synthesis, analysis, validation, characterization, and pharmacological evaluation of compounds. In addition to metabolism, drug receptor interactions and drug targeting.

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