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Letter to the Editor

A Case for Chirality - chiralpedia.com

Valliappan Kannappan*

Founder, chiralpedia.com, Coimbatore, INDIA

The Pharmacy degree course curriculum marks the most crucial stage of conventional pedagogy because specialized discipline-based, content-oriented courses in pharmaceutical and allied areas of knowledge are introduced at this juncture. Students reach this stage after learning chemistry for 12 years of general education, to pursue their careers in pharmaceutical sciences and other allied areas enabled by it. To say that pharmaceutical science is a domain enabled by applied chemistry is an understatement. Therefore, knowing the chirality, that is, the handedness or asymmetry of molecules and compounds, will play a crucial role in drug discovery, formulation development, and other applications.

This field of knowledge, in turn, calls for an enormous thrust in specialized education on a fast-growing basis and a depth of study that needs to be delivered and realized within the prescribed duration of the study. Hence, the scramble to deliver a teaching learning process leads to the introduction of a topic, and it is often left to the discretion of the student to develop or neglect it. The inability to deliver education using a discipline that is amenable to students with very little or no specialization in this field remains a challenge that needs to be addressed.

The pharmaceutical and medicinal chemistry courses in the pharmaceutical curriculum are one such victim. Medicinal chemistry is a cross-cutting topic that spans all facets of the pharmaceutical product life cycle but receives scant attention for want of curricular space. Medicinal chemistry is an interdisciplinary science that requires a conceptual understanding of physical, organic, analytical, and pharmacological undertones to the subject. So, the development of a cross-cutting subject matter in the program that provides students with a sufficient background in medicinal chemistry helps towards the acquisition of curriculum objectives.

The chiral aspects of medicinal chemistry, for instance, just find a cursory mention in the curriculum while the depth of the subject matter demands a thorough conceptual understanding.

Correspondence
Dr. Valliappan K
Founder, chiralpedia.com, Coimbatore, INDIA
Email id: valliappan@chiralpedia.com
ORCID ID 0000-0003-0276-439X

In the first instance, students cannot be expected to grasp the complex nature of stereochemical aspects of organic molecules and therapeutic drug products, and because of this lack of conceptual understanding, the risk of not realizing the curricular objectives is high. This translates into a poor knowledge base in this area and, as such, restricts the acquisition of learning outcomes. Students should be able to get an in-depth grasp of the importance of stereochemical aspects, in particular chirality, with respect to medicinal chemistry through the curriculum. It is important to understand that chirality penetrates all the branches of pharmaceutical sciences, viz. organic, synthetic, and medicinal chemistry; pharmaceutical analysis; pharmaceutics; pharmacology, and pharmacy practice. The prominence of chirality is evident from the fact that scientists were awarded the Nobel Prize in Chemistry in 2001 and again in 2021 for the development of catalytic asymmetric synthesis and asymmetric organocatalysis, respectively. Despite this rich and expanding content of chemistry, chirality concepts, in general, and chiral pharmaceuticals as a particular class of molecules, are not covered with much emphasis in all these areas, and this could be a great impetus for academic research.

Chiralpedia.com is a free, professionally curated online resource. Chiralpedia provides an online educational resource for chiral science, in particular stereochemistry, drug chirality, chiral synthesis, separation, analysis, and chiral materials. This site is meant for academia (faculty, research scholars, and students who are novices in the field of chiral technology) and industry as its target audience. Chiralpedia is continuously updated to keep pace with the advancements in chiral science. Chiralpedia is an ideal choice for students, instructors, and professionals working in the areas of chirality and organic chemistry.

After the pandemic, which brought a change in learning delivery methods and students' getting comfortable with self-study, directed study, and flipped classrooms and the like, online resources are increasingly used to deliver learning. In many cases, students are then left to their own devices when it comes to finding the necessary and relevant materials to supplement

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the required course material. Chiralpedia is a resource where students and others can find easily accessible learning materials that are relevant to their specific needs. Chiralpedia.com can be a missing link in achieving a greater depth of understanding in an area of study that can help with their career. This is where Chiralpedia.com comes in – a comprehensive platform providing easy access to up-to-date information on chiral molecules and chirality, authored by the researchers working in this area who actively contribute through editing and adding relevant content.

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