Organic Chemistry for Drug World

Organic chemistry has vital importance because the most of the biological molecules in living systems are largely made of organic basis. Therefore, organic chemistry is very crucial in discovering new drug candidate molecules for the treatment of a vast of diseases.

The organic chemistry course in Faculty of Pharmacy aimed to lead students to be aware of the fundamentals of “Drug World” for their preparation to medicinal features of the diseases on molecular levels based on chemical structures.

Organic chemistry plays very crucial role in the pharmaceutical industry to discover new molecules and the persistence to be one of the key driving forces in the drug development progression.

However, the detailed nature of that role is experiencing a visible change, not only because of the new synthetic methods and technologies now available to the synthetic and medicinal chemist, but also in several key areas, particularly in biochemistry, pharmacology, metabolism and toxicology, as well as bioinformatics. Therefore, pharmaceutical and medicinal chemists make several related arrangements with the ever more rapid dispatch of molecular assay data that ate supposed to effect of their assignments on creating new molecules for specific biological activities.

We already know now organic chemistry is the science of the arrangement, structure, properties and reactions of substances, especially of atomic and molecular systems. Our life itself is full of chemistry, and life is the contemplation of a series of uninterrupted biochemical progressions. From the structure of the cell to the entire organisms, the presence of organic chemistry is prominent and people are built anatomically and physiologically by mostly organic materials. All living organisms are constituted of abundant number of organic molecules. Evolution of life initiates from one particular organic molecule named a nucleotide. Nucleotides join together to form the building blocks of our life. Our identities, heredities and continuation of generations are all managed by chemistry. In our everyday life, whatever we see, use or consume is the gift of research in chemistry for thousands of years. In fact, chemistry is applied everywhere in modern life. From the coloring of our clothes to the shapes of our PCs, all are possible due to chemistry. It has played a major role in pharmaceutical advances, forensic science and modern agriculture. Diseases and their remedies have also been a part of human lives. Chemistry plays an important role in understanding diseases and their remedies, i.e. drugs. The focus of this section is given to the role of chemistry in modern medicine.

Drugs that we use for the healing of various illnesses are chemical compounds, either organic or inorganic. Nevertheless, most drugs are based on organic structural features. Aspirin is a well-known example. It has possibly the widespread usage as an analgesic drug as well as many other usages in some cardiovascular related diseases. Aspirin, with structural simplicity and low cost, is chemically known as acetylsalicylic acid, an organic molecule. The precursor of aspirin is salicin, which is found in willow tree bark. However, aspirin can easily be synthesized from phenol using the Kolbe reaction. As we progress through various text notes for this course, we will come across a series of examples of “Drug World” with several sophisticated examples and their chemical and physical properties, in the oncoming course times.