

Synthesis of Molecules in Modern Chemical Science: Challenge for Today

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Editorial

Role of synthetic researcher is to develop new routes to synthesize newer molecule and the medicinal chemist is most involved with drug designing and their development. Generally, drugs are the versatile organic molecules used as active ingredients in medicines to diagnose, cure, mitigate, treat, or prevent disease. Inorganic and organometallic molecules are also useful ingredients in medicines. Molecules are built by humans from other molecules found on earth using the skills inherent in our natural brains. There are toxic compounds and nutritious ones, stable compounds and reactive ones but there is only one type of chemistry; it goes on both inside our brains and bodies and also in our flasks and reactors, born from the ideas in our minds and the skill in our hands. Nowadays in area of synthesizing active drugs, their designing, development and application is the difficult task for chemists [1]. When a candidate opts to join research, has determine to design novel molecular framework through statistical, combination, permutation, old experiences, structure of existing drugs in nature and literature, computer libraries of lead compounds, high-through-put programme, etc, develop newer routes, propose mechanistic pathway and choke out their mode of action through biological assessment [2,3]. Synthetic procedure is varies from a simple conical flask in a research laboratory to a very complicated elaborated assembly in industries. A synthetic chemist generally does not achieve the exact reaction products mentioned on the paper. It is complicated by multiple product formation and side reactions. Separation and identification problems are always faced by a synthetic researcher. One pot synthesis of compounds is also carried out, but there is a sign of interrogation on their purity.

The role played by organic chemist in pharmaceutical industry continues to be one of the main drivers in the drug discovery process [4]. However, the precise nature of the role is undergoing a visible change, not only because of the new available to the synthetic and medicinal chemists, but also in several key areas, particularly in drug metabolism and chemical toxicology, as chemists deal with the ever more rapid turnaround of testing data that influences their day-to-day decision. New drugs are necessitated to cure new diseases, to find less hazardous drug and to cure diseases whose drugs have become ineffective due to resistant strains of microorganisms. Besides these causes, new drug discovery and researches are required to recognize pharmacophore present in the effective drugs [5,6]. The main object of any research should replace the broad-spectrum medicines by narrow spectrum drugs, designing of which is possible in the light of pharmacogenomics. Physical and climatic conditions of global geography require drugs according to environmental physiology. Thus there is a growing need of research in the field of synthetic and medicinal chemistry.

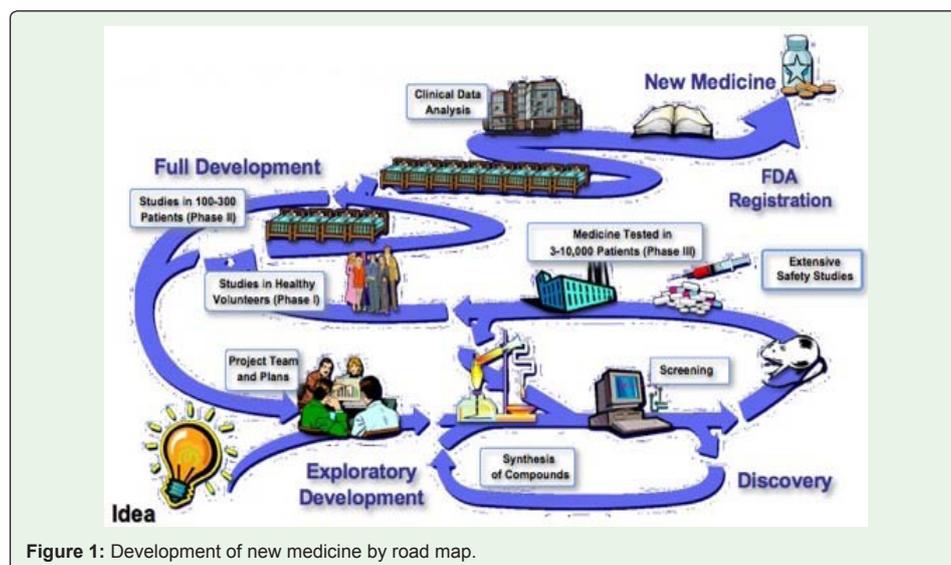


Figure 1: Development of new medicine by road map.

There are many new challenges, both intellectual and technical, for synthetic organic chemists engaged in diversity-oriented synthesis. It is a fertile ground for chemists, one that is beginning to facilitate the discovery of new drugs today and that promises to make many new connections to biology and medicine in future (Figure 1). Finally, this communication helps to find upcoming information on the drug design and development of new effective molecules into medicines.

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