

Green Organic Chemistry, a New Paradigm in Pharmaceutical Sciences

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Abstract : Green organic chemistry which is the latest and one of the most researched topics now-a-days has been in demand since 1990's. Majority of the research in green organic chemistry chemicals are some of the important starting materials for greater number of major chemical industries. The production of organic chemicals has raw materials (or) reagents for other application is major sector of manufacturing polymers, pharmaceuticals, pesticides, paints, artificial fibers, food additives etc. organic synthesis on a large scale compound to the laboratory scale, involves the use of energy, basic chemical ingredients from the petro chemical sectors, catalyst and after the end of the reaction, separation, purification, storage, packing distribution etc. During these processes there are many problems of health and safety for workers in addition to the environmental problems caused there by use and deposition as waste. Green chemistry with its 12 principles would like to see changes in conventional way that were used for decades to make synthetic organic chemical and the use of less toxic starting materials. Green chemistry would like to increase the efficiency of synthetic methods, to use less toxic solvents, reduce the stage of synthetic routes and minimize waste as far as practically possible. In this way, organic synthesis will be part of the effort for sustainable development. Green chemistry is also interested for research and alternatives innovations on many practical aspects of organic synthesis in the university and research laboratory of institutions. By changing the methodologies of organic synthesis, health and safety will be advanced in the small scale laboratory level but also will be extended to the industrial large scale production a process through new techniques. The three key developments in green chemistry include the use of super critical carbon dioxide as green solvent, aqueous hydrogen peroxide as an oxidising agent and use of hydrogen in asymmetric synthesis. It also focuses on replacing traditional methods of heating with that of modern methods of heating like microwaves traditions, so that carbon foot print should reduce as far as possible. Another beneficiary of this green chemistry is that it will reduce environmental pollution through the use of less toxic reagents, minimizing of waste and more bio-degradable biproducts. In this present paper some of the basic principles, approaches, and early achievements of green chemistry has a branch of chemistry that studies the laws of passing of chemical reactions is also considered, with the summarization of green chemistry principles. A discussion about E-factor, old and new synthesis of ibuprofen, microwave techniques, and some of the recent advancements also considered.

Keywords : energy, e-factor, carbon foot print, micro-wave, sono-chemistry, advancement

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