Investigational study of emerging Green Chemistry in modern medicinal research

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Abstract:

Green chemistry does not means Green as a color but an alternative to design of chemical products and processes that reduce, minimize or eliminate the use and generation of hazardous substances. “Green Chemistry” in short GC, refers to the promotion of safe, sustainable, and waste - minimizing chemical processes. The proliferation of green chemistry metrics without any clear consensus on industry standards is a significant barrier to the adoption of green chemistry within the pharmaceutical industry. Researchers and Chemists along with Environmentalist and Biologists propose the Green Aspiration Level (GAL) concept as a novel process performance metric that quantifies the environmental impact of producing a specific pharmaceutical agent while taking into account the complexity of the ideal synthetic process for producing the target molecule. Application of the GAL metric will make possible for the first time an assessment of relative greenness of a process, in terms of waste, versus industry standards for the production process of any pharmaceutical. A simple methodology for defining process starting points, which is an important aspect of standardizing measurement to ensure that Relative Process Greenness (RPG) comparisons are meaningful. GC is based on the fundamental or outstanding principles that when implemented right will maximize the incorporation of raw materials into the final products with environmentally-friendly substances and methodologies. The use of solvents and catalysts as greener technologies are emphasized. GC play an important role in pharmaceutical in developing innovatory drug delivery methods which are less toxic and more useful, effective with minimum side effects and could help millions of patients. In pharmaceutical industry, some drugs generate large amount of waste as by products during their synthesis which results the low yield in the final products. In this review, the green alternative pathway of Acetaminophen (paracetamol) and Ibuprofen among other were reported. Pfizer’s Viagra process as an example, and outline aspiration level opportunities for industry and government to dis mantle green chemistry barriers. Green chemistry is also known as sustainable chemistry. It is used to design of chemical products and procedures that reduce generation of hazardous chemical substances. Green chemistry applies diagonally the life cycle of a chemical product, including its manufacture, use, design, and ultimately disposal. Approaching towards Green Chemistry is very helpful in prevention of pollution at the molecular level, it gives innovative scientific solutions, and it reduces the negative impacts of chemical products on human and the environment health.

KEY WORDS: GC, Pharmaceuticals, Relative Process Greenness (RPG),Green Aspiration Level (GAL)