Commentary
Volume 7:1, 2021

Journal of Pharacognosy and Natural Products

ISSN: 2472-0992 **Commentary**

Substitute Inebriant for Pharmaceutical Analysis

John Andreus*

Department of Medicine, University of Burundi, Bujumbura, Burundi

About the Study

The analytical methods of greening have gained rising interest in the field of pharmaceuticals to improve the health safety of analysts and to decrease environmental impacts. Reversed-phase high-performance liquid chromatography (RP-HPLC) is the most widely used analytical technique in pharmaceutical drug development and manufacturing such as the quality control of bulk drugs and pharmaceutical formulations, along with the analysis of drugs in biological samples. However, RP-HPLC methods commonly use large amounts of organic solvents and generate high quantities of waste to be disposed of, leading to some issues in terms of ecological impact and operator safety. In these contents, greening HPLC methods is becoming highly desirable. One strategy to reduce the impact of hazardous solvents is to replace classically used organic solvents with greener ones. As yet, ethanol has been the most often used alternative organic solvent.

High-Performance Liquid Chromatography (HPLC) is the most generally used analytical tool for pharmaceutical analysis. In point of fact, it is the most important technique involved in the quality control of bulk drugs and pharmaceutical formulations, and also in the determination of drugs and metabolites in biological samples. Most HPLC methods developed in pharmaceutical laboratories are related to the reversed-phase (RP) mode, using a hydrophobic stationary phase and a polar mobile phase. In quality control, the primarily used detection mode is the ultraviolet (UV)/Visible detector. Thus, mobile phase compatibility with this detection is a parameter often taken into account in pharmaceutical analysis development. The mobile phase of RP-HPLC is usually a mixture of water and organic solvents, such as acetonitrile (ACN) and methanol (MeOH). These two solvents are by far the endorsed organic solvents used in RP-HPLC because of their remarkable combination of properties favorable for RP-HPLC applications.

Mobile phases in RP-HPLC are classically mixtures of water, involving additives to adjust pH and ionic strength, and organic solvent. Acetonitrile and MeOH are the two organic modifiers mostly used by HPLC users in the RP. Unfortunately, both solvents are ranked hazardous due to their toxic effect and the great aspect placed on the safe detoxification of their waste, even though MeOH is considered more environmentally friendly than ACN, and therefore, should be chosen whenever possible. Since it appears difficult to develop an RP-HPLC method without an organic solvent, a strategy to make this technique greener is to replace ACN and MeOH with other less toxic organic solvents to put down the environmental and health impacts. The greenness degree of an organic solvent is evaluated based on its environmental, health, and safety (EHS) criterion and life-cycle assessment (LCA). With reference to the health and environmental issues of organic solvents commonly used in RP-HPLC, the greening of RP-HPLC methods has received great interest in the analytical community, whose purpose is to search for new alternatives to replace polluting analytical methods with cleaner ones. The EHS assessment is composed of environmental indicators, as well as indicators related to human health and safety hazards. It allows the assessment of probable hazards inherent to the solvent properties.

Greening liquid chromatographic methods have to turn into a great interest in the field of pharmaceutical analysis to protect both the operators' health and the environment. Certainly, thousands of chromatographic equipment are routinely used for quality control of pharmaceuticals around the world, representing high amounts of organic solvents consumed and wastes generated. The different applications presented in view of this, highlight that green RP-HPLC methods using alternative solvents can be successfully performed without any major compromise in terms of chromatographic performance. Moreover, these approaches are rather economical, as they do not require expensive equipment and reduce waste disposal costs.

***Address for Correspondence:** John Andreus, University of Burundi, Faculty of Medicine, Bujumbura, Burundi, Tel: 7046812221; E-mail: johnan98@yahoo.com*

Received February 01, 2020; **Accepted** February 15, 2020; **Published** February 22, 2020

How to cite this article: Andreus. "Substitute Inebriant for Pharmaceutical Analysis" J Pharmacogn Nat Prod 6 (2020): 154