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Mini Review

Ethanol on HPLC: Epiphany or Nonsense?

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Abstract

The planet begins to scream for help through devastating natural phenomena and climate change. The man witnesses the emergence of new diseases, no effective drugs, super bacteria's, and his vulnerability to life. This is the status of man and his world. So, the man starts to look more towards his health, quality of life and everything that surrounds him. In this context, one of the contributions of the chemical-pharmaceutical analyst to the evolution of his friendship with the environment and his own well-being is the use of less toxic reagents, such as ethanol on HPLC. HPLC is one of the most modern and most used techniques in analyzing products, impurities and degradation products. Ethanol is derived from renewable and biodegradable sources and ethanol residues are easily removed without the need for incineration. So why not link these two and then use ethanol on HPLC? Would that be an epiphany or nonsense?

Keywords: Ethanol; HPLC; Environment; Quality of Life

Introduction

Currently the concern for the environment AND human health are on the rise and walking together.

On the one hand, the planet begins to scream for help through devastating natural phenomena and climate change. On the other hand, the man witnesses the emergence of new diseases, no effective drugs, super bacteria's, and his vulnerability to life.

In view of this setting, the man starts to look more towards his health, quality of life and everything that surrounds him, in this case, the environment in which he is inserted. Thus, it is possible to see the man PLUS the environment walking together.

The man realized that the destruction of the environment is his own destruction. If one perishes, the other also perishes. He also realized that the environment does not depend on him, and yes, he depends on the environment, to be well.

This environment in which the man is inserted concerns his work environment, in large part. People spend more of their lives in the work environment exercising their professions than with their families and at home.

Thus, the man realized that significant changes in the work environment could contribute to improve both the own quality of life as the environment. He changed the use of toxic organic solvents such as acetonitrile and methanol [1], widely used, by ethanol in the chemical-pharmaceutical analyzes by HPLC. Ethanol has less environmental impact and lower risk to the health of the analyst compared to traditional solvents [2].

On-Site Analyst

A chemical-pharmaceutical analyst who works 8 hours a day and 5 days a week is inhaling solvent throughout this period.

Acetonitrile in the organism is rapidly absorbed by the lungs and gastrointestinal tract, and one of the products of its metabolism is cyanide. Cyanide can block the cellular respiration process, leading to cytotoxic anoxia. The acute symptoms of exposure are chest pain and headache, nausea and weakness. Prolonged exposure, liver, lungs, kidneys and central nervous system can be affected [3].

Methanol in the organism is metabolized and excreted more slowly than ethanol. Intoxication is commonly associated with ingestion of this solvent, but inhalation of high vapor concentrations and percutaneous absorption also cause health damage [4].

What is the impact of your analytical decision on your body?

The Problematics

Acetonitrile when incinerated, nitrogen wastes are generated, contributing to the formation of acid rain. Furthermore, for the production of acetonitrile as a by-product of acrylonitrile synthesis, there must be much more energy than that in the production of ethanol [5].

The serious effects of methanol intoxication are due to the toxic action of the products of its metabolism, formaldehyde and mainly formic acid. Undoubtedly, when referring to methanol exposure, the most important route is the inhalation route, especially if the concept of cumulative toxicity and repeated exposures is taken

into account, with the elimination of the agent occurring more slowly and the possibility of more health risks. The analyst who works 5 days a week every week, noted above, is the example of this exposition.

Animal contamination by disposal of untreated or erroneously treated toxic chemicals can cause incalculable disasters. Water contamination by disposal of untreated or erroneously treated toxic chemicals can cause irreparable disasters. Therefore, the health of the environment, and consequently of the beings that live in it, becomes threatened and can lead to great tragedies.

The Epiphany

The ethanol (Figure 1) is derived from renewable and biodegradable sources and ethanol residues are easily removed without the need for incineration [6].

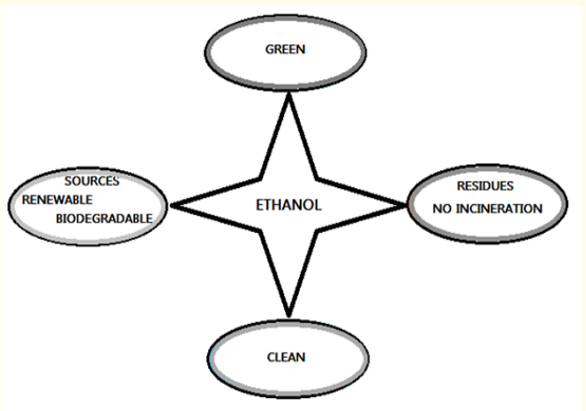

Figure 1: Advantages of ethanol.

The use of ethanol in pharmaceutical analyzes by HPLC is a reality. Products containing ampicillin, cefepime, caffeic acid and rifaximin have already been contemplated by this change and present methods described in the literature for the evaluation of their quality [7-10].

This thought of change is part of the so-called green chemistry. Obviously only a single change is not enough but a set of changes, all in the same sense of seeing man and the environment as one, with direct consequences of one in the other. It is the vision of the whole, that is, multidisciplinary.

This is only one form and one example of concatenating attitudes that aim to improve both the life of the chemical-pharmaceutical analyst as well as the environment. They use ethanol for this, and you?

Conclusion

The need for chemical-pharmaceutical analyst to start looking at their attitudes in a multidisciplinary way is urgent. They must be aware of their analytical decision and that a small attitude, such as choosing a less toxic reagent, can make a big difference in the environment and in their health if everyone works in this direction.

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Declaration of Interest

The authors report no declarations of interest.

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