

Trace determination of paraben in artificial saliva spray with gold nanoparticle assisted and head space gas chromatography

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Abstract

Introduction: Preservatives such as parabens in health products and pharmaceuticals cause different diseases and cancers in humans. It is very important to study and control the content of this substance in pharmaceutical preparations, and in particular artificial saliva sprays. The proposed method is a nanotechnology-based methodology that can help to achieve useful results in the field of quick and accurate control of health-related products. Also, comparable figures of merit are predicted using this method.

Methods and Results: In this research, the determination and measurement of paraben in the formulation of the drug products- artificial saliva spray- by headspace gas chromatography method using the simplicity of the matrix headspace as well as free from the complexity of the matrix of the sample, gas chromatography system is provided with the aid of a nano-scale catalyst. This approach is a new trend in the saliva matrix in Iran and around the world. In recent years, many studies have been conducted on the analysis of parabens in cosmetics and pharmaceutical products. Despite these studies, research on the determination of parabens to increase the sensitivity and precision of the method is still limited. The application of gold nanoparticles with a new approach in terms of using expired pharmaceutical waste for functionalization of gold nanoparticle and applying this method to the preparation of nano-catalysts would results in the creation of an appropriate added value and reduce the final cost of production.

Conclusions: Generally, sulfuric acid and para-toluene sulfonic acid are used as catalysts for the sterilization reactions. In this study, the use of functionalized nanoparticles with a novel approach, in the form of utilization of expired pharmaceutical waste (L-cysteine) for the preparation of nano-catalysts, was evaluated. This novel method of nano-catalyst production can create an appropriate added value and lowers the cost of finished products. The application of a nanoscale catalyst can be a novel method with acceptable accuracy to measure preservatives such as parabens in complex environments.

Key words: Artificial Saliva Spray, Paraben, Head Space Gas Chromatography, Gold Nanoparticle

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