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www.elsevier.com/locate/talanta

PII: S0039-9140(16)30885-2
DOI: http://dx.doi.org/10.1016/j.talanta.2016.11.011
Reference: TAL17038

To appear in: *Talanta*

Received date: 30 September 2016
Revised date: 4 November 2016
Accepted date: 5 November 2016

Cite this article as: Manoel J.A. Lima and Boaventura F. Reis, A clean photometric method for the determination of losartan potassium in pharmaceuticals exploiting light scattering effect and employing a multicommuted flow analysis approach, *Talanta* http://dx.doi.org/10.1016/j.talanta.2016.11.011

A clean photometric method for the determination of losartan potassium in pharmaceuticals exploiting light scattering effect and employing a multicommuted flow analysis approach

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ABSTRACT

This paper describes an environmentally friendly procedure for the determination of losartan potassium (Los-K) in pharmaceuticals. The photometric method was based on the light scattering effect due to particles suspension, which were formed by the reaction of Los-K with Cu (II) ions. The method was automated employing a multicommuted flow analysis approach, implemented using solenoid mini-pumps for fluid propelling and a homemade LED based photometer. Under the optimized experimental conditions, the procedure showed a linear relationship in the concentration range of 23.2 – 417.6 mg L^{-1} (r = 0.9997, n = 6), a relative standard deviation of 1.61% (n = 10), a limit of detection (3.3*σ) estimated to be 12.1 mg L^{-1}, and a sampling rate of 140 determinations per hour. Each determination consumed 12 µg of copper (II) acetate and generated 0.54 mL of waste.

Keywords: Multicommuted flow analysis; Losartan potassium; Green chemistry; Spectrophotometry; LED photometer; Pharmaceutical samples.

1. Introduction

Hypertension is a condition affecting millions of people worldwide, and for this reason, the antihypertensives being increasingly used to combat cardiovascular morbidity [1, 2]. AT1 receptor blockers like losartan potassium (Los-K) are widely used for this purpose [3]. Los-K provides advantageous pressure control, reducing the risk of stroke and the progression of renal disease to the terminal stage in diabetic patients [1, 4], and can be administered in combination with diuretics [5]. Furthermore, the use of this drug increases