Biosci. Biotech. Res. Comm. 5(2) 2012; 206-209

BBRC Intl. Science Journal

Bioscience Biotechnology Research Communications

Quantitative estimation of Aloin from *Aloe vera* leaf extracts by High Performance Thin Layer Chromatography

Sharique A. Ali, Ram K. Choudhary and J. Lakshman

Post Graduate Department of Biotechnology, Saifia Science College, Bhopal.

ARTICLE INFORMATION

Accepted after revision 22th May 2012
Corresponding Author
BBRC ISSN : 0974 - 6455
A Soc Sci Nat India Publication

Key Words:

Aloe vera
Aloin
HPTLC
Quantitative analysis

ABSTRACT

A simple, sensitive and precise high-performance thin-layer chromatographic (HPTLC) method for analysis of aloin fromAloe vera leaf extracts was carried out for validation. The separation was carried out on TLC aluminium plates precoated with silica gel 60F-254, , stationary phase was eluted with ethylacetate-methanol-water (10 :1.4 : 1) as mobile phase. Densitometric analysis of aloin was carried out in the absorbance mode at 356 nm. This system was found to give compact spot for aloin (Rf value of 0.76). A good linear regression relationship between peak areas and the concentrations was obtained over the range of 15mg/ spot with correlation coefficient 0.99722. The limit of detection and quantification was found to be 355.88 and 631.01 ng/ spot. The method was validated for precision and recovery. The proposed developed HPTLC method can be applied for identification and quantitative determination of aloin from Aloe vera extracts.

INTRODUCTION

Aloe vera L. (*Aloe barbadensis* Miller) is an important medicinal plant which belongs to the family Liliaceae, of which there are about 360 species. *A. vera* is a cactus-like plant that grows readily in hot, dry climate and currently, because of it's cosmetic demand,it is cultivated on a large scale irrespective of climatic conditions . The peripheral bundle sheath cells of *A. vera* produce an intensely bitter, yellow latex, commonly termed as aloe juice, or sap, or aloes. *A. vera* sap and gel are often confused. Unlike aloes, *A.vera* gel contains no anthraquinones, which are responsible for their strong laxative effects . However, total leaf extracts may contain anthraquinones as well (Moghaddasi and Verma, 2011).

A. vera has huge demand and is traded in medicinal drug markets of the world for a wide range of therapeutic applications such as wound healing effect, reductionof blood sugar in diabetes, for soothing burns, for easing intestinal problems and for reducing arthritic swellings. It has also ulcer curative effects and stimulates immune responses against cancer (Davis *et al.,* 1994).Various cosmetic products are also made from the mucilaginous tissues of *A. vera* leaves, commonly called as aloe gel (Dal'Belo *et al.*, 2006). Anthraquinones derivatives in *A. vera* sap play an important role in the treatment of tumors, diabetes, ulcer and cancer (Ishii *et al.,* 1990; Vogler and, Ernst, 1999 ; Esmat *et al.,* 2006).

Aloin, also called barbaloin is a bitter tasting yellow crystal, and is the C-glycoside derivative of anthraquinone. It is a major constituent found in *A. vera* leaves, and it has been noted that the level of this anthroquinone ranges from 0.1 21.5% dry weight in the leaf exudates of 68 *Aloe* species (Wyk *et al.,* 1995).

HPTLC is a sophisticated and automated form of TLC It is an invaluable quality assessment tool for the evaluation of botanical materials. It allows for the analysis of a broad number of compounds both efficiently and cost effectively. Additionally, numerous samples can be run in a simple analysis thereby reducing analytical time with HPTLC. The analysis can be carried out using different wave lengths of light that can provide complete picture of plant active principles with more specific analysis. In the present study, determination of aloin from *A. vera* leaf extracts has been done using HPTLC,in order to quantitatively evaluate the amount of aloin present in the leaves .

MATERIALS AND METHODS

Fresh Leaves of *A. vera* (whole plant) were collected from around Bhopal and identified by Dr. S.S. Khan, ethnobotanist, Saifia College of Science. A voucher specimen (284/BOT/Saifia/11) is deposited at the herbarium of the Department of Botany, Saifia College of Science, Bhopal. All the chemicals used in the experiments were of analytical grade. Reference