

Anthracene Derivatives And Their Extraction From Aloe Vera Plant

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Abstract

From ancient time, aloe plants have been used in traditional medicines to cure a range of ailments. C- glycosides called anthraquinone are present in aloe vera and other forms of the aloe plant. Aloe is used to treat constipation because anthraquinones have a purgative effect. These irritate the gastrointestinal tract and cause the large intestine to resist feces. Aloe contains anthraquinones that are identified by different chemical and analytical methods. In this study these substances are examined by the spectroscopic studies.

Keywords: Anthraquinone, Extraction, Aloe, spectroscopic studies.

INTRODUCTION

Aloe Vera fruits, *Azadiracta indica* leaves, and *L. esculentum* leaves were all examined for the presence of several phyto-constituents¹. Glycosides, terpenoids, steroids, tannins, flavonoids, carbohydrates, saponins, protein, alkaloids, and amino acids are a few examples. Despite being native to a specific geographic area, Curacao succulents are grown in the Indies. It has a stem that is between 30 and 60 cm tall with opaque, green leaves that are flattened on one side and convexo-concave on the other. The leaves are around 15–30 cm long, with well arranged spines running perpendicular to the border²⁻³. The blossoms are yellow-colored. *savourey vulgaris* De Lamarck, Jean Baptiste, and succulent *officinalis* Succulent *barbadensis* has two separate names, *forsk.* Chinese succulent "The kind of the inquiry done here, necessitated that some legendary pure examples of anthracene compounds be accessible," wrote Baker, who brought aloe vera from China to Curacao in 1617. As a result, the following compounds were prepared (Figure 1). Aloe vera, aloe *ferox*, aloe *barbadensis*, socotrine aloe, peri aloe, and other kinds of aloe genus contain anthraquinone, which are C- glycosides.⁴ The leaves of these aloe species are spiky. The primary origin of the components employed as juice, callus, or bulk mass for their pharmacological activity is the leaf. By using a modified Brontrager test, in which ferric chloride is added to the compounds with hydrochloric acid, it is possible to identify the anthraquinones present in aloe. The remaining ingredients in aloe vera, aloe *perri*, and aloe *barbadensis* are aloin, barbaloin, and isobarbaloin. The Klunge test is used to identify the components of isobarbaloin in leaves.⁵⁻⁶

MATERIALS AND METHOD

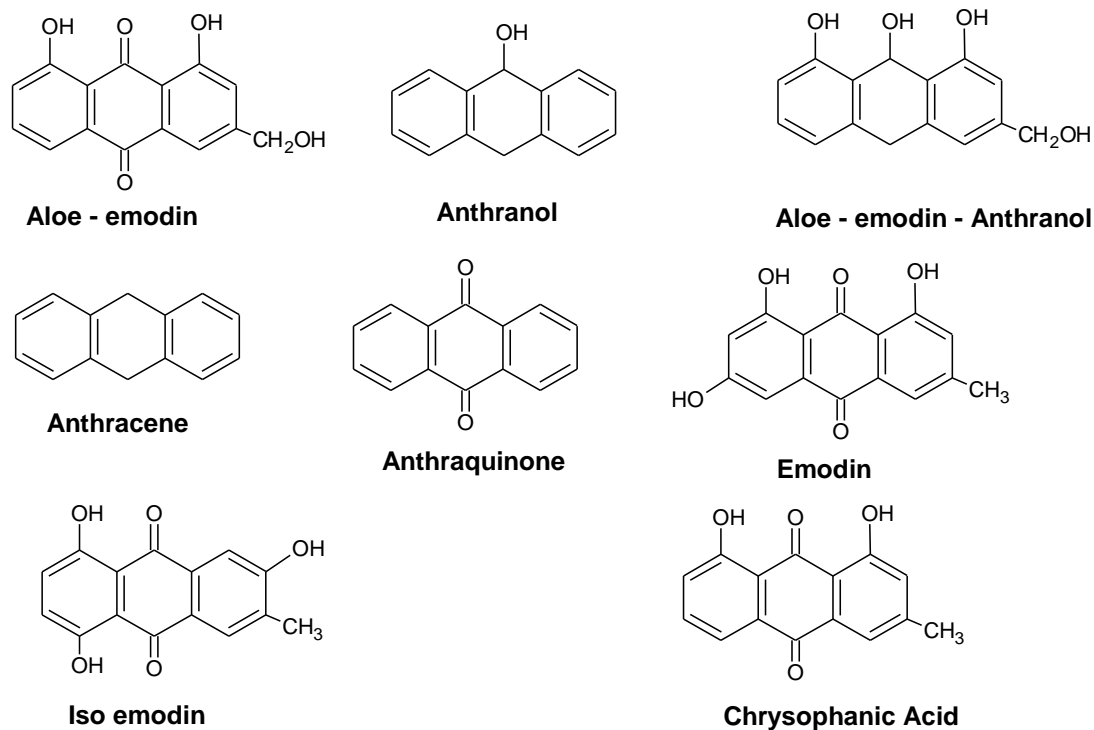


Fig. 1: Anthracene Derivatives

A. Aloe-Emodin:

Aloe-emodin was prepared in accordance with Cahn and Simonsen's plan⁷. 150 cc of water, 50 g of ferrous chloride, and 10 g of aloin were refluxed for six hours. Aloe-emodin crystallized as orange needles when the brown solid that separated from the cooled resolution was chilled. This solid was collected, dried, and extracted using boiling dissolver. Any sublimate by sublimation under vacuum was the aloe-emodin. Aloe emodin made with this method has a temperature between 220° and 222°. A M.P. of 213° was listed by Cahn and Simonsen.

B. Aloe-Emodin-Anthranol:

A hundred cc. of water dissolved 10 grams of aloin and 10 grams of mineral, which were then warmed to boiling and kept for an hour with agitation. At this temp. the first yellow resolution become darker) and have a powerful inexperienced light. The mixture was cool down and acidified with focused acid wherever a dark brown precipitate observed. The precipitate was cleaned free from acid and dried. The precipitate was treated with benzene to extract a substance chemical phenomenon in straw needles. These needles were recrystallized continuously from glacial carboxylic acid. They were observed to soften at 196°. Sublimation below vacuum, modified the chemical entity of the material. This natural action was well-tried by below red analysis of the change entity. As a result, purification of aloe-emodin-anthranol by vacuum sublimation isn't counseled.

C. Chrysophanic Acid:

Chrysophanic acid was ready in line with the strategy of John H. Gardner⁸.

OBSERVATION AND RESULTS

Spectroscopic Evaluation of prepared Anthracene Derivatives

Different outcomes from the spectrophotometer examination of pharmaceuticals and medications were achieved after these compounds were evaluated for their spectroscopic investigations with the appropriate equipment (Table -1).

Table 1: Identification of Aloe Emodin, Aloe-Emodin Anthranol Chrysophanic acid Emodin

Wavelength (nm)	Percent Transmittance			
	Aloe-Emodin	Aloe-Emodin Anthranol	Chrysophanic acid	Emodin
340	-	26.2	-	-
350	93.2	20.0	80.1	58.8
360	93.0	17.0	74.2	51.0
370	91.3	17.3	65.9	44.2
380	89.0	21.8	57.0	38.7
390	86.0	29.7	47.0	31.2
400	82.6	40.8	37.8	23.5
410	79.2	51.9	30.0	16.0
420	76.7	60.8	25.1	10.8
430	74.8	65.2	22.5	6.8
440	76.4	69.8	26.0	4.8
450	78.8	73.5	31.3	6.82
460	83.0	77.6	42.5	8.0
470	91.0	87.2	68.4	14.9
480	96.0	93.7	87.6	34.15
490	97.8	96.8	97.8	65.3
500	98.3	97.98	98.76	87.94
510	98.3	-	100.0	97.89
525	98.5	98.64	-	100
550	99.1	99.24	-	-
575	99.7	99.73	-	-
600	100.0	99.98	-	-

The aforementioned structures specify the various quantities of various compounds like aloe emodin, aloin, chrysophanol, and anthraquinones. These beneficial components are present in the aqueous extract. Aloe is employed to treat constipation because anthraquinones have a purgative effect. These irritate the gastrointestinal tract and lead the large intestine to resist feces. Other applications include those for treating diabetes, acting as an antioxidant, an antiviral, an antifungal, and an anticancer.

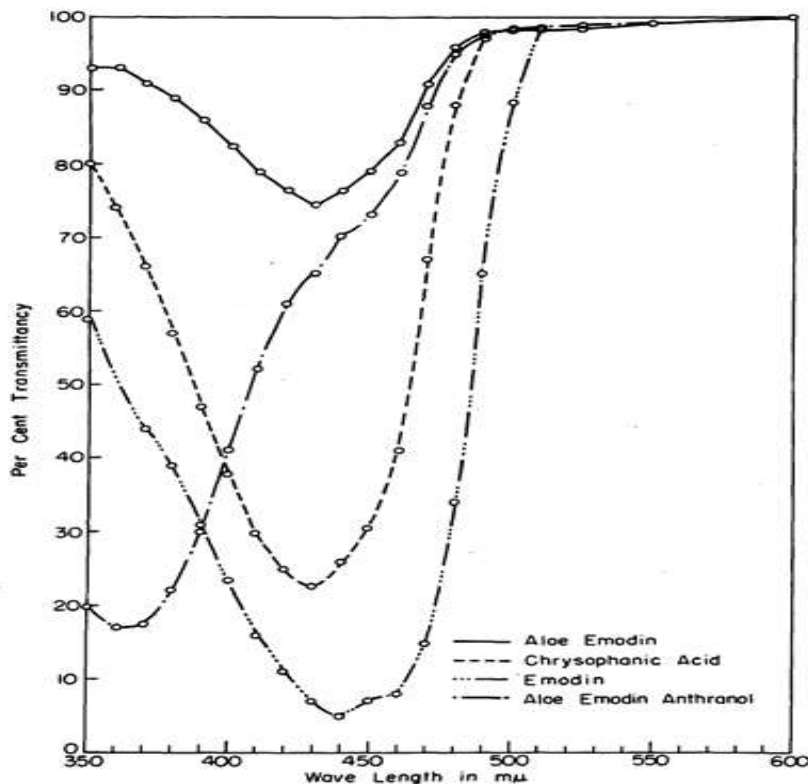


Fig. 2: Identification of Constituents

Aloe emodin anthranol, emodin, chrysophanic acid, and aloe emodin peaks are depicted in the provided figure (Figure – 2). Aloe perri, aloe ferox, socotrine aloe, and aloe barbadensis are used to extract and isolate these ingredients. The plant has leaves and is primarily found in desert regions. These are present with elements of barbaloin and isobarbaloin. For identification, morphological characteristics differ. To identify their contents and substances from their extracts for a specific use and to identify compounds, several chemical tests and spectroscopic analyses are performed.

CONCLUSION

Using the appropriate solvent systems, the chemicals and extracts from various aloe species, including aloe vera, aloe ferox, Socotrine aloe, and aloe barbadensis, were extracted and separated. Important compounds as aloe emodin, aloin, anthracenol, and anthraquinone were analyzed using various spectral approaches and properly identified using identification tests. In the current global context, aloe's pharmacological qualities are also discussed.

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