

## **Two-Year Study Monitoring Several Physical and Chemical Properties of Field-Grown Aloe *barbadensis* Miller Leaves**

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### **ABSTRACT**

A study was initiated in April 1991 with support from the International Aloe Science Council to develop baseline information as part of a certification program for Aloe *barbadensis* products. The information generated constitutes an Aloe *barbadensis* fresh gel database so product quality can be continually monitored for certification. The pH, total solids, soluble solids, calcium, magnesium, sodium, and potassium concentrations have been documented.

Over the two-year period, some parameters found in weekly testing of fresh Aloe *barbadensis* leaves did show seasonal fluctuations. A HPLC profile indicated an identifying downstream peak for the freshly prepared Aloe extract or the frozen extract on each sample tested.

### **INTRODUCTION**

Aloe *barbadensis* Miller (also known as Aloe vera), a member of the family Liliaceae, is cultivated for its thick fleshy leaves from which many substances are obtained. In the past, the yellow resinous latex that exudes from the leaves was used as a laxative or purgative (Cheney, 1970). Because of Aloe gel's reputation as a folk remedy for burns and wounds, some people keep one or more plants readily available at home. Starting more than 50 years ago, the gel in the parenchyma cells of the leaf was being processed and marketed as a drink product. Today, the industry is flourishing and the gel is being used in many products such as fresh gel, juice, and other formulations for health, medical, and cosmetic purposes (Blitz et al., 1963; Cera et al., 1980; Genet and van Schooten, 1992; Morton, 1961)

As Aloe marketing increases, many more people are purchasing creams, ointments, juices, and even facial tissue and shampoo containing the gel of Aloe. Of the many Aloe-based products on the market, some contain Aloe as claimed, whereas others may not or may have insufficient amounts of Aloe than that shown on their labels. The expanding Aloe industry urgently needed a way to police itself by developing test procedures and a reliable database so that a product claiming to have Aloe could be tested and certified (Waller, 1992). This certification not only could reduce fraudulent claims, but also would build consumer confidence in Aloe products.

One problem in certifying various products was the lack of needed reliable data. With the development of an Aloe database, products' quality can be continually monitored and certification revoked if standards are not being met. The International Aloe Science Council (IASC), the certifying body of the Aloe industry, needs to know the content and levels of certain constituents in the raw Aloe materials and how these levels fluctuate with different harvest times in plants grown at various locations. A study was initiated in April 1991 with support from the IASC to develop certain baseline information that could be used by IASC as part of a certification program for Aloe products. A preliminary report covering the first 33 weeks of data was previously published (Wang and Strong, 1993).

### **CONCLUSIONS**

In conclusion, the parameters found in our two-year weekly testing of fresh Aloe *barbadensis* leaves do show seasonal fluctuations. The pH consistently falls in the range 4.4 to 4.7. Total solids content of Aloe gel is 0.66% and soluble solids are 0.56% with some seasonal fluctuation. The seasonal levels of four minerals: calcium, magnesium, sodium and potassium have been documented. Over the 112-week study

period, the HPLC profile indicated an identifying downstream peak for the freshly prepared Aloe extract or the frozen extract. The International Aloe Science Council, Inc. is now using the data collected in this study and others to provide a much needed certifying service to the Aloe industry. The information generated in this research will aid the Aloe industry in strengthening the standards set forth by the IASC.

The complete results of this study are available for purchase from the International Aloe Science Council, Inc. [E-Mail](#) us for details.



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