



Despite the astounding technological growth, when it comes to food consumers are increasingly interested in the benefits of natural products like aloe vera. Image Source: Pexels user [Tina Floersch](#)

Over the past two decades, we have witnessed the emergence of technologies that were previously unimaginable. From the rise of the internet to the automation of manufacturing, technology now shapes our world in ways that have fundamentally altered how we function. Both individually and collectively. Yet, while our dependence on high-tech living is greater than ever, we are simultaneously experiencing a new appreciation for natural goods that have stood the test of time. Perhaps nowhere is this truer than [in the food industry](#). In this dialectical environment, traditional plants are increasingly being incorporated into modern edible products. And one of the stars of this movement is aloe vera.

Aloe vera is best known for its topical, sunburn-soothing applications. But, owing to its healing properties, the sticky substance has actually been used in food form for thousands of years. Rich in antioxidants, amino acids, minerals, and essential vitamins, aloe vera is said to regulate metabolic activity, alleviate inflammation, and even prevent diabetes.<sup>1</sup> Today, aloe vera is available in a virtually endless array of edible products, from gel capsules to yogurt to the extraordinarily popular aloe vera juices and waters that have taken the world by storm in recent years.<sup>2</sup>

This enthusiasm for ingestible aloe vera comes at a time when consumers demand not only natural products but natural products of the highest quality. For aloe vera products, this means that manufacturers are now turning to the possibilities of new technologies to enhance their products both functionally and aesthetically. In order to evaluate the effects of these technologies on the sensory properties of aloe vera products, measuring the color of aloe vera gel has become a critical part of the assessment process.



Incorporation of aloe vera gel in a range of new edible products is spurring researchers to develop new technologies that will preserve the plant's functional and sensory properties. Image Source: Flickr user [Health Gauge](#)

### **Incorporating New Technologies in Aloe Vera Gel Processing**

To allow raw aloe vera to be transformed into a safe consumable product with a stable shelf-life, it must first undergo processing. Often of the side-effect of processing is the removal of the very properties for which aloe vera is renowned. Heating, dehydration, and grinding may all leave the aloe vera products with minimal or no active ingredients. As such, there is now growing interest in using our advanced technologies to develop new processing methods that will preserve its beneficial properties while giving consumers the sensory experience they have come to know.

One of the most promising technologies available to date is high hydrostatic pressure (HHP). According to a cohort of researchers led by Karina Di Scala, HHP "optimizes the intake of nutritive phytochemicals in human food" and makes it "possible to obtain safe and wholesome food that maintains all sensory qualities."<sup>3</sup> In contrast to heat-based processing methods, HHP minimizes the risk of thermal damage, allows for improved flavor and texture, and can be performed more rapidly. However, one of the most striking benefits of HHP is the possibility of color retention.

### **Measuring the Color of Aloe Vera Gel**

The color of aloe vera gel is one of its most significant sensory components, signaling freshness and suggesting the taste. Even slight deviations from consumers' color expectations can have a drastic impact on [how aloe vera products are perceived and experienced](#). Due to the vital role of color, the researchers determined that color retention must be an integral part any assessment of HHP technology.

In order to measure the effect of HHP on aloe vera gel color, Di Scala *et al.* employed a [HunterLab MiniScan spectrophotometer](#) to collect objective color data. As they note, “Color as a sensory characteristic is best evaluated through the determination of color difference, a quantity that expresses color variation with respect to a reference value.” By measuring the color of samples processed at various settings and comparing them to a standard based on untreated control samples, the researchers were able to determine an optimal pressure range (150 to 250 MPa). Combined with investigation into HHP’s impact on antioxidant capacity, phenolic content, firmness, and rehydration ratio, “these results showed that HHP technology ... would be highly beneficial for the production of a high quality ingredient.”



Spectrophotometers offer a simple, rapid, and economical way to monitor color at every stage of the manufacturing process. Image Source: Pexels user [Pixabay](#)

### **The Value of Spectrophotometers**

Spectrophotometers are a critical part of evaluating emerging technologies as we seek to create better processing methods for aloe vera and optimize the health benefits of this remarkable substance. However, the value of spectrophotometers goes much further; these instruments can be easily integrated into the manufacturing processes itself to ensure accurate coloration at every stage and continuously monitor the impact of process variables on the production line. By giving you real-time feedback on aloe vera gel appearance, you can instantly be alerted to an undesirable color variation that compromises the quality of your product. This allows you to ensure that only the best products are released into the marketplace, helping you both [enhance public perception of your brand](#) and minimize the economic costs associated with a faulty product. At a time when consumers demand the highest quality, this can be pivotal for your business and solidify your place in an increasingly competitive market.

## HunterLab Innovation

HunterLab has been at the forefront of color measurement technology for over 60 years. Today, we offer a comprehensive range of cutting-edge spectrophotometric instruments to help our consumers in the food industry create the best possible products for a new generation of discriminating consumers. With [a full lineup of portable, benchtop, and in-line spectrophotometers](#) to choose from, we have the tools you need to rapidly assess color quality at any stage of the research or manufacturing process. [Contact us](#) to learn more about our renowned instruments, customizable software packages, and world-class customer support services.

1. "What Are the Benefits of Eating Aloe Vera?", June 23, 2015, <http://www.livestrong.com/article/245440-what-are-the-benefits-of-eating-aloe-vera/>
2. "Why Is Everyone Suddenly Drinking Aloe Juice?", February 10, 2015, <http://www.prevention.com/beauty/aloe-juice-benefits>
3. "Chemical and Physical Properties of Aloe Vera (Aloe Barbadensis Miller) Gel Stored After High Hydrostatic Pressure Processing", February 20, 2013, [http://www.scielo.br/scielo.php?script=sci\\_arttext&pid=S0101-20612013000100009](http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0101-20612013000100009)