Aloe Vera: Medical Marvel or Mumbo Jumbo?

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Abstract

For centuries the aloe vera plant has been exulted for its medicinal properties. From ancient Egypt to 21st century America, we have made use of the plant as a topical preparation, for ingestion, and as a cure all for a variety of other ills. It is proposed to be of benefit for the digestive and immune systems, as well as having healing effects on the skin. Although it is believed to originate in tropical Africa, the plant is now cultivated across the continents in order to match supply to demand for this popular “alternative” therapy. Preparations on sale to the public may be extremely costly, and vary widely in the proportion of aloe vera that they contain. Health professionals need to be able to offer objective advice to patients who may be considering using products containing aloe, in order to prevent unnecessary cost, and possible adverse effects. In this article we highlighted the possible benefits of aloe vera and assess the evidence to support these claims. We found the that popular anecdotal belief by the general public regarding the health benefits of aloe vera cannot be substantiated, however the placebo effect cannot ignored and there a safe side effect profile.

INTRODUCTION

For centuries the aloe vera plant has been exulted for its medicinal properties. From ancient Egypt to 21st century America, we have made use of the plant as a topical preparation, for ingestion, and as a cure all for a variety of other ills. It is proposed to be of benefit for the digestive and immune systems, as well as having healing effects on the skin. Although it is believed to originate in tropical Africa, the plant is now cultivated across the continents in order to match supply to demand for this popular “alternative” therapy. Preparations on sale to the public may be extremely costly, and vary widely in the proportion of aloe vera that they contain. Health professionals need to be able to offer objective advice to patients who may be considering using products containing aloe, in order to prevent unnecessary cost, and possible adverse effects. In this article we aim to highlight the possible benefits of aloe vera and assess the evidence to support these claims.

Aloe vera is the most well known of the several hundred species of aloe. Other members of the species are prized as ornamental herbs, but none have the reputation of aloe vera with regard to medical benefit. The succulent plant is native to Africa, but can be cultivated in warmer areas of Europe, America and Asia, where it grows as a rosette of thick, stiff, grey-green leaves at ground level (Figure 1).

Figure 1

Figure 1. Aloe Vera plant in native state and demonstrating the pulp.

Medicinally, the plant yields two separate substances, both of which have been used for a therapeutic effect. The first of these is aloe juice (also known as sap, or aloes). This is a bitter, yellow liquid obtained from the pericyclic tubular cells, beneath the leaf epidermis. Aloe juice contains a mixture of glycosides known as anthraquinones (also found in senna), which have been used medicinally for their potent laxative effect.

The plant also produces a thicker, jelly like preparation, termed aloe gel. It is to this gel that the majority of health benefits of aloe vera are attributed. It is produced by parenchymal cells in the central portion of the leaf, and is a rich mixture of a variety of substances. The gel comprises over 70 constituents, and it is currently unclear to which of these the medicinal effect is attributed. Vitamins, amino acids, sugars, minerals and salicylic acids are all found in the gel, and may contribute to the possible therapeutic effects of

the preparation.

DERMATOLOGICAL EFFECTS

The suggested effects of aloe vera on the skin have captivated the cosmetic industry, as well as medical interest, and aloe vera is now a common component of substances ranging from washing up liquid to shaving gel. Although some benefit of the gel may be simply down to a moisturising effect, it has also been reported to be of specific use in wound and burn healing, treatment of frostbite and psoriasis, and in the prevention of skin damage from gamma radiation (Combest 2000).

Trials on wound healing with aloe vera have produced mixed results, most of which are more promising in animal models than in human studies. Rodent studies suggested an increase in healing of punch biopsy wounds (Davis 1989), as well as changes in wound healing, such as the deposition of increased amounts of Type III collagen, hyaluronic acid and dermatan sulphate (Chithra 1998). However, in humans results have been less promising, although anecdotal reports of improved healing of pressure ulcers persist, there has been no good quality trial evidence to support this claim (Atherton 1998). A recent small-scale trial of pressure sore dressings found no benefit of those containing an aloe derivative (acemannan) over the use of saline dressings (Thomas 1998). In addition, a further small study found aloe vera dressings used on caesarean section scars and laparotomy scars in women actually slowed the process of wound healing (Schmidt 1991). A small trial looking at wound healing after dermabrasion (used in the treatment of severe acne and as a cosmetic procedure) did show more rapid healing, faster re-epithelialization and less oedema of skin treated with aloe vera, as compared with a polyethylene oxide wound dressing (Fulton 1990). It is difficult, however, to compare different trials, due to the variety of preparations of aloe vera available for use, which does not allow easy comparison of quantity of active ingredient.

The debate surrounding the use of aloe vera in psoriasis also persists. A randomised, double blind trial of sixty patients showed extremely promising results in the topical use of aloe vera for patients with chronic psoriasis (Syed 1996). As compared with placebo, the aloe vera gel cleared up significantly more psoriasis plaques and led to an improved PASI (Psoriasis Area and Severity Index) score. These results have been questioned in a second study, which actually showed aloe vera to be worse than placebo in improving plaque severity (Paulsen 2005). However, it should be noted that this study could not rule out an active component of their placebo cream due to the high overall rate of improvement.

It has been relatively commonplace for units carrying out radiotherapy, particularly for breast cancer patients, to use aloe vera creams to minimise radiation damage. An extensive, review of this topic has been published, which concluded that aloe vera cannot be regarded as having a protective role against radiation induced skin damage (Richardson 2005). Furthermore, one study found that simple aqueous cream was more effective than aloe vera at reducing desquamation and treatment related pain (Heggie 2002).

GASTROINTESTINAL EFFECTS

As previously mentioned, aloe vera has long been used for the laxative effect of anthraquinones. A more recent suggestion has been that aloe may be of some benefit in chronic inflammatory bowel diseases, such as ulcerative colitis (Langmead 2004). Currently evidence is still lacking, but a small, double blind, randomized controlled trial has shown a positive effect of aloe juice when used as a treatment for ulcerative colitis (Langmead 2004). Patients with mild to moderately active ulcerative colitis were given an oral preparation of aloe vera (or placebo) to drink twice a day for four weeks. Promising results were seen, with increased numbers of patients in the active treatment arm having clinical remission or improvement of disease. The small scale of the trail (49 patients) means firm conclusions cannot be deduced, but it does serve as a preliminary investigation into this field to identify whether there is an effect , and how it may be maximized.

IMMUNOMODULATION EFFECTS

In vitro studies have been used to try and assess whether aloe vera may have a role as an immunomodulator. It has been found to affect cytokine production (Reynolds 1999), and to have an action in promoting maturation of dendritic cells (Lee 2001), both of which may explain possible effects on the immune system. Furthermore, derivatives of aloe juice have been shown to have virucidal capacity against certain viruses, including herpes simplex, varicella zoster and influenza (Sydiskis 1991). This may explain the possible use of aloe vera as a treatment for genital herpes. Two trials have shown a beneficial effect of aloe vera extract when applied topically as a treatment for first episodes of genital herpes (Syed 1996b, Syed 1997).

DIABETES EFFECTS

The evidence for a role for aloe vera in diabetes is also unclear. Dried aloe sap has been used as a traditional remedy for diabetes, leading to research into possible effects on blood glucose levels (Pandey 1995). Two studies have been published by the same research group, which indicated a hypoglycaemic effect of aloe gel. Both studies involved oral administration of aloe gel for between 6 and 12 weeks, either as a single agent (Yongchaiyudha 1996), or in addition to glibenclamide, a standard oral hypoglycaemic (Bunvapraphatsara 1996). Blood glucose levels were significantly reduced in the aloe vera group. However, neither study was randomized or blinded, and can therefore not be regarded as solid evidence of an anti-diabetic effect.

CONCLUSIONS

The popular anecdotal belief by the general public regarding the health benefits of aloe vera cannot be substantiated. There are conflicting results from small- scale studies and currently there is no area in which aloe vera can be claimed to have a definitive and impressive therapeutic role. Adverse effects of aloe vera do not seem to be common, although they are certainly not unheard of, and case reports of thyroid dysfunction (Pigatto 2005), Henoch-Schonlein purpura (Evangelos 2005) and hepatitis (Rabe 2005) have all been published.

In view of these potential side effects, and a lack of clear evidence of medical benefit, it seems premature to advocate the use of aloe vera for any medical purpose. However, the evidence in favour of the use of aloe vera is certainly not insignificant, and it may yet prove the cynics wrong and emerge as the medical miracle that Christopher Columbus believed it to be.

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