Aloe vera extracts in equine clinical practice

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describes some recent experiences

THE medicinal properties of the Aloe plants have long been attested. The Egyptians and ancient Greeks used extracts in the treatment of various conditions and the products from the plants have been included in reputable oriental and western herbal texts for centuries.

In more recent years, investigations of the efficacy of Aloe extracts have assessed the value of the products in radiation disease, tuberculosis and thermal burns.

The stability of the raw extracted gel is not prolonged and in the 1960s the cosmetic and pharmacological industry succeeded in devising a process which stabilised the extracts for use in oral and topical products.

The plant (*A. vera barbarensis*) is now commercially grown on a wide scale and harvested to provide large quantities of extract for the cosmetic and health food market.

In the past few years there has been a great deal of interest in the medical potential of extracts of the Aloe plant and there has been much enthusiasm for the use of the plant in a whole host of conditions. Presumably the reason for this resurgence is in part due to the increasing fashion for "herbal", "natural" and "organic" remedies, and is a further manifestation of the popularity of alternative medicine.

There are also a number of highly motivated companies and network marketing organisations with enthusiastic sales forces that waste no opportunity in promoting the use of Aloe vera for innumerable medical conditions.

It is not surprising that this enthusiasm has spilled over into veterinary medicine; Aloe vera products are now packaged and promoted for pet treatments, and informed suppliers are working hard to promote the products for use in horses and farm stock.

In common with much of the veterinary profession, the attitude within our practice to the value of these products has been sceptical, not least because the advertised spectrum of efficacy which has included almost everything from Navicular disease to strangles seemed grossly unbelievable.

Despite these reservations, we agreed to take a quantity of the extracted gel, supplied by the leading UK importer of Aloe, in order to attempt to assess the efficacy of the product in specific conditions.

Two formulations of Aloe extract have been used on equine clinical cases: an oral gel that is mixed with feed, and a topical gel used as a skin lotion.

Selection of cases for the assessment was not straightforward: in a practice situation there is little opportunity for tightly controlled trials and horses presented by clients for treatment cannot easily be allocated to control or placebo groups.

Skin cases have therefore been treated using Aloe vera on the basis of our established experience with other topical products: we have used the plant extract on lesions which we know would respond in predictable ways to other medications and compared results.

Lethargy syndrome

In the case of the oral gel, we selected a syndrome which has been largely unresponsive to mainstream therapy and which therefore offered us the opportunity to explain to clients that we proposed to prescribe the Aloe vera because there was little else we could do.

The condition in question is the persistent leucopaenia and lethargy syndrome of competition horses which we have become familiar with in recent years. Horses affected by this disease have lower than normal total leucocyte counts when compared with other horses in the yard of similar type, age and condition.

They often have good appetites and may be in good condition. They have persistently poor exercise tolerance and may be lethargic in the stable. Typically, total leucocytes remain at less than 5.5 x 109/l, some staying down at the level of 2 x 109. Differential counts are variable, some horses have a distinct monocytosis, others have a lymphocytosis. Red cell counts are variable; some horses show a concomitant anaemia.

The condition may be secondary to an obvious viral or bacterial respiratory infection, but in other horses there is no obvious precipitating cause and the owner simply reports that the horse is lifeless and dull.

Because of the similarity to human post viral or persistent viraemic syndromes, colleagues have suggested that a viral agent is likely to be responsible, but to date no virus isolation or identification has been forthcoming.

Without any treatment, a proportion of these horses will recover with rest and time, but others will remain lethargic for months on end. In our experience, multi-vitamin supplementation, antibiotics and other mainstream therapies have failed to achieve any response.

In the light of the interest in Aloe vera for treatment of similar syndromes in human patients and after reading reliable accounts of the immuno-modulating properties of Aloe vera constituents, we have treated cases of persistent leucopaenia and lethargy with Aloe oral gel at a rate of 240ml per day for three to five weeks.

All the horses included in the trial had leucopaenia and depression but no other signs of disease or infection. Some had previously received other treatments for the condition, including multivitamins and other immunostimulants such as bacterial cell wall extracts (Equimmune, Baypamun) or levamisole. None of the horses included in the results below was given concurrent treatments whilst on the Aloe vera therapy.

Response

Results of our experience with oral Aloe vera for the treatment of this condition are given in **Table 1**. Cases reported here are those in which the animals had been persistently leucopaenic and lethargic for more than three weeks and in which no other concurrent treatment was prescribed.

The results indicate that a significant proportion of horses appear to respond to oral Aloe vera medication. In those animals which showed an increase in the total circulating leucocytes, there was also an increase in vitality and exercise tolerance. The animals marked with an asterisk showed no improvement and were turned away for further rest. These results are significantly better than those obtained in our experience with other treatment regimes or with rest alone.

The topical efficacy of Aloe vera extract has been less easy to monitor because there are well proven and effective medical therapies for the majority of equine dermatological conditions and owners are understandably reluctant to allow a product to be trialed if the trial requires the withholding of proven remedies.

We have, however, used topical Aloe gel for the treatment of circumscribed fungal derma-toses (Ringworm) in which individual horses have been presented with a few lesions. In these cases, the response to three times daily application of the topical gel for one week has been at least as effective as the application of Eniconazole.

Distal limb dermatitis (mud fever) has also been treated by the application of Aloe extract, in conjunction with the usual changes of management to ensure thorough cleaning and drying of the legs. In these cases, the resolution of the dermatitis has been

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equally speedy with the Aloe extract as with topical antibiotic/anti-inflammatory ointments.

Contact hypersensitivity (plaque urticaria) due to numnah or girth detergent reaction has been treated in a number of horses with topical Aloe vera. The evidence of inflammation has subsided as quickly and as well as we would have expected with topical or systemic conventional anti-inflammatories.

Contaminated wounds treated by the application of Aloe vera gel have healed in a very satisfactory manner without additional antibiotic cover and without the development of excessive granulation tissue, even when the wounds have been in mobile areas of the distal limbs.

Clearly reports of this nature are, to some extent, subjective and, as detailed earlier, cannot stand the test of close scrutiny for control or objectivity. Nevertheless, despite the limitations of this form of clinical study, we believe that there are genuine therapeutic benefits to be gained from the administration of Aloe vera extracts.

It is tempting to be cynical about such products because they are promoted in a thoroughly unscientific manner and because there is no detailed analysis of constituent chemicals and compounds. The value of plant derived medicines is, however, well established and the general acceptance of therapeutic agents such as digoxin, salicylates, atropine, pyrethrum and cocaine indicates that other potentially useful plant derived products must not be dismissed as "alternative" simply because they are not fully analysed and documented.

Acemannan

In fact, there is an increasing body of literature that appears to be providing some of the reasons for the possible efficacy of Aloe vera extracts. To date, the work in the established, peer reviewed texts has concentrated upon the immuno-modulating properties of one of the con-stituents of Aloe extracts, acemannan.

Acemannan is an acetylated mannose polymer, a water soluble long chained molecule with a molecular weight ranging from 10,000 Da to greater than 1 x 106 Da.

It is known to be a potent immunostimulant which has been shown to enhance macrophage release of interleukin 1 alpha, tumour necrosis factor and PGE2.

In vitro, acemannan enhances macrophage phago-cytosis and affects T cell activity, increasing T cell production of other cyto-kines. There are reports that ace-mannan has direct suppressive effects upon the tissue culture of such viruses as influenza and Newcastle disease.

These immuno-modulating actions are shared by other groups of compounds, notably extracts of certain bacterial cell walls and viral preparations. Commercially licensed veterinary products containing these extracts are available in Europe and the USA, where clinical indications include the treatment of sarcoids, squamous cell carcinomas, pyoderma and respiratory disease.

All the immuno-modulators appear to act by activating cytokine genes within the macrophages after the molecules of the immuno-modulating agent have been phagocytosed.

The specific cytokine enhancement varies from product to product; for example, the mixture of cytokines released by human peripheral blood mononuclear cells exposed to acemannan is different from the mixture stimulated by bacterial cell wall lipopoly-saccharides.

Immuno-modulating compounds may also have a direct effect upon macrophage activity: in vitro studies show enlargement of the cells, increased lysosomal enzyme content and increased vacuolation in cells challenged with immunomodulators.

Authors and clinicians reporting upon the use of these compounds in clinical situations emphasise that immuno-modulators are not to be viewed as alternatives to conventional therapy, but may prove to be very useful adjuncts, for instance in the treatment of equine respiratory disease where antibiotics and mucolytics may also be indicated.

The results which appear to be achieved in horses with persistent viraemia may be a reflection of immuno-stimulation in animals suffering either primary or secondary immunosuppression.

Authors have suggested that immunosuppression may occur in a variety of situations. Immature animals may have sub-optimal immunological responses.

Animals stressed by factors such as repeated transportation may become immuno-suppressed because of the excessive release of endogenous steroids. Over-exercise may lead to immunosuppression.

In the case of topical application of Aloe vera, local immuno-stimulation may be occurring via similar pathways to the systemic effects, but the reported efficacy in certain bacterial and fungal infections may indicate that the plant extract contains specific, unrecognised agents which have bacteriostatic or antifungal action.

There has been recent concentration upon the presence in Aloe vera of the compound Mannose-2-phosphate, a molecule which is currently generating interest because of its association with the wound-free healing of embryonic tissues.

It is possible that compounds such as this are responsible for the apparent anti-inflammatory action of Aloe vera; wound healing and mediation of local inflammation such as urticaria involve processes at a cellular level which are basically immunological.

A poster presentation at the ACVS congress last year detailed the beneficial effect of local acemannan upon wound healing in rabbits with exposed bone beneath surgically created skin deficits.

TABLE 1. Horses with persistent leucopaenia treated with extract of aloe vera

Breed	Sex	Wt kg	Pre-treatment WBC x 109/l	Post treatment WBC x 109/l	Outcome
TB	G	520	5.4	10.12	Returned to eventing
TB	M	500	4.68	7.85	Returned to eventing
TB	G	520	5.18	5.61	Returned to point to pointing
TB/ID	G	600	5.23	7.30	Returned to showjumping
WB	M	480	2.4	6.45	Returned to dressage
TB/WB	M	580	6.1	7.2	Returned to eventing
TB	G	510	6.4	7.5	Returned to eventing
TB	G	500	5.26	6.55	Returned to eventing
Pony	G	380	3.88	7.44	Returned to Pony Club work
TB	M	520	5.18	6.38	Sent to stud
HalfB	G	500	4.14	4.84	Persistent lethargy – further rest *
Arab	G	400	5.15	6.74	Returned to pleasure riding
Morgan	S	480	5.1	5.8	Sent to stud *
WCob	G	450	5.1	6.4	Persistent lethargy – further rest *

All horses detailed in Table 1 were adult (>4yo); none showed concurrent signs of infection, parasitism or other disease.
G = gelding M = mare S = stallion
** The animals marked with an asterisk showed no improvement and were turned away for further rest.*

Further reading

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