

PRELIMINARY OBSERVATIONS OF A NATURAL EYE OINTMENT FROM CURCUMA AROMATICA TO TREAT GOAT KERATOCONJUNCTIVITIS AND UVEITIS

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SUMMARY

The livestock industry has been relying merely on chemically synthesized antibiotic for eye infections as sprays and ointment. A natural remedy from *Curcuma* spp. has been tested for efficacy in curing keratoconjunctivitis and uveitis. A severe case of uveitis has been cured within 7 days, with impaired vision restored. These results are observations of a preliminary study conducted in a goat with uveitis.

Keywords: Keratoconjunctivitis, uveitis, natural product therapy

INTRODUCTION

The use of natural product in the treatment of eye infection in human has been practiced by Siddha masters for thousands of years. However, in the middle of 20th centuries, where chemically synthesized drug was at dominance, the natural therapy has been placed in a limelight. The eye infection in livestock industry was treated mainly with tetracycline and oxytetracycline ointment and sprays, which are costly. Therefore, this novel attempt of curing eye infection in veterinary practice was to evaluate the efficacy and cost effectiveness of natural therapy from nutraceutical, namely *Curcuma aromatica*.

MATERIALS AND METHODS

High grade *Curcuma aromatica* was obtained from Tamil Nadu, India and total curcuminoid was extracted using methanol as solvent (Rana *et al*, 2012). The extract was then measured for total curcuminoid using a curcuminoid standard curve established earlier. The extract was then hygienically blended with sesame oil as the carrier. A concentration of 200 microgram (0.2 mg) per gram (w/w) was prepared. Thus, the curcuminoid medicated oil was then filled in an aerosol can as spray.

A 3-year-old female goat suffered from a severe bilateral uveitis and blindness was selected for the experiment. It was blind for a few days as bilateral uveitis have impaired its vision and was kept in confinement as free grazing was impossible. The doe was blind to see and eat its own feed. The prepared compound is known to be safe and non-irritant to the cornea and conjunctiva. The topical eye spray was carried once daily for seven days (Akram *et al.*, 2010).

RESULTS AND DISCUSSION

This novel attempt to cure severe eye infection could be accomplished with curcuminoids which play a role of antibiotic. The curcuminoid is effective against a wide

range of gram positive and gram negative bacteria (Gunes *et al.*, 2013). Therefore, the compound could be further purified to develop natural antibiotic for a wide range of veterinary and medical treatment. The concentration and the advantage over chemically synthesized antibiotic were compared in Table 1.

Item	Curcuminoid Eye Spray	Oxytetracycline Eye Spray (Terramycin Pink Eye Spray)
Nature	Natural Product	Chemically synthesized
Concentration of active ingredient	0.2 miligram	2.0 miligram
Cost (RM)	40/400 ml can	50/150 ml can

Table 1. The comparison of natural and chemically synthesized antibiotics

The curcuminoids is effective at a 1/10 concentration of oxytetracycline eye spray being used for a long time in the livestock industry. The cost of the curcuminoid is much lower than the imported Terramycin pink eye spray. Apparently, the use of natural antibiotic may pave a way to reduce dependence on imports as well as improving the bioeconomy of *Curcuma spp.* farming for drug development.

In addition, it also prevents the 2R (Resistance and Residue) issues currently haunting the healthcare industry. The curcuminoids could also be developed into intramuscular and intravenous injections apart from capsule and tablet forms. The efficacy of curcuminoid could prevent invasive and painful subconjunctival injection of antibiotics practiced in livestock eye infection, especially the ruminant.

Besides that, the side effects and toxicity of natural products are generally much lower compared to the chemical therapeutics as they are functional foods and nutraceuticals. Therefore, all efforts has to be initiated to spurs the development of biopharmaceutical industry as the spillover effect on the tropical economy is very great as it stimulates the cultivation and farming of these nutraceuticals in Asean countries; as the tropical countries

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harbours the greatest diversity of biologically active flora. As such, the poor countries in Asia could be transformed to be a bioeconomic giant with the development of the biopharmaceutical industry (Leland *et al.*, 2010).

The eye's clinical improvements were as follows (Figure 1 to 4).



Figure 1. (Left) Left eye, (Right) Right eye - The goat was presented with the right eye was severely infected and has keratoconjunctivitis and uveitis - Vision impaired



Figure 2. (Left) Left eye, (Right) Right eye (3rd day post spray) - The inflammation or the reddening reduced with the iris and pupil visible



Figure 3. (Left) Left eye, (Right) Right eye (5th day post spray) - The uveitis further reduced to reveal normal brownish iris with slight corneal opacity



Figure 4. (Left) Left eye, (Right) Right eye (7th day post spray) - The eye resumed its normal brown colour of iris with slight corneal opacity of the right eye

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