



Literature Review on the Welfare Implications of

Deer Velvet

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THE ISSUE

Velvet refers to the entire cartilaginous antler (prior to calcification) of a range of cervids including deer¹ and elk.^{2,3,4} Most velvet antler is exported to Asian markets⁵ (particularly Korea) as a complementary medicine or dietary supplement, but it is also sold for these purposes in the United States.^{6,5}

Antlers in velvet are sometimes taken as trophies or eaten⁷, but velvet is consumed primarily with the goal of improving or maintaining health. Immature antler contains a complex combination of proteins, amino acids, minerals and lipids.⁸ Benefits claimed to be derived from velvet antler include improvements in sexual function, immune function, athletic performance, recovery from illness and injury, and response to stress, as well as ‘application[s] against cancer’.⁹ Velvet is also commonly described as a general tonic. Data from empirical research are limited and there are some potential obstacles to conducting research trials on what are currently unconventional health products.¹⁰

Controlled trials using non-human animal subjects—Controlled trials with rats indicate velvet antler is non-toxic^{11,12} and may assist liver function. Data from research using mice indicate that velvet antler might assist in the management of adverse reactions to morphine.¹³ Mikler et al found that elk antler extract applied topically improved cutaneous wound healing in diabetic rats. One study found it improved the gait of dogs suffering from osteoarthritis.² Recently one author found chronic wasting disease (CWD) prions in the velvet of elk that were affected with the disease.¹⁴ CWD is a contagious, fatal prion disease of deer and elk.¹⁴ This research suggests that humans who consume antler velvet as a nutritional supplement are at risk for exposure to prions.

Controlled trials using humans subjects—One small-scale study found that deer velvet powder produced improvements in strength and endurance in male physical education students (n=17). This is balanced by results from several other studies where velvet antler did not improve muscular performance or reduce post-training pain,^{3,15} and failed to reduce rheumatoid arthritis symptoms not fully controlled by medication.¹⁶ The most recent meta-analysis found that chondroitin, a key component of velvet antler-based products, does not reduce joint pain caused by osteoarthritis.¹⁷

VELVET REMOVAL

Pain—Velvet antler is innervated and vascularized tissue and its removal without analgesia causes pain.¹⁸ Administration of lidocaine has been shown to be a reliable and effective form of analgesia,^{18,19,20,21} although there is concern that lidocaine may leave residues in the velvet antler product.¹⁸

The use of compression bands alone has produced mixed results.^{19,20} In a study where deer when

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anaesthetized and responses to compression, lidocaine, and no analgesia compared; animals that received a lidocaine ring block had a lower heart rate at time of removal than they did prior to treatment.²⁰ These animals also had significantly lower blood pressure at antler removal than the compression band animals.²⁰ In the same group of animals as the previous study, electroencephalographic responses were evaluated between the groups.¹⁹ While median frequency and spectral edge frequency in the lidocaine ring block group were significantly lower than baseline at antler removal, they were significantly higher than baseline in compression and no analgesia groups at antler removal.²⁰ A recent study again compared the analgesic effects of the compression ring to that of lignocaine ring blocks. This study found that the application of rubber rings by either standard procedure or a cable-tie method produced similar outcomes to lignocaine ring blocks in terms of desensitization of the antler in response to the nick test.²¹ However, the study also concluded that as the mechanical compression of nerves and anoxia from the occlusion of blood vessels is the most likely path of analgesic effects of compression rings, there is a much slower onset of analgesia.²¹ Therefore, they found that the recommendation that a delay of one hour between application of the rubber rings and removal the velvet antler is justified.²¹

Postoperative pain relief is not routinely provided when velvet antler is removed and more research is required to establish safe and effective techniques.¹⁸

Stress—Velvet removal and associated handling and restraint also cause physiological and psychological stress. Stress responses such as elevated plasma and salivary cortisol concentrations and body temperature may be reduced by providing sedatives and using nutritional support, including electrolytes, sugars and amino acids.²² Use of sedatives is associated with chemical residues (*xylazine*)²³ and may produce a lighter color in the antler that is considered undesirable by some consumers (*xylazine, fentanyl*).²⁴

ACCEPTABILITY

The FDA has considered applications but does not currently recognize any therapeutic effects of velvet antler. Velvet antler products, however, may be marketed as dietary supplements or nutraceuticals.

General animal welfare legislation in the United Kingdom and Ireland is interpreted as effectively banning the farming of velvet antler.²⁵ However it is an accepted and regulated industry in other countries such as New Zealand.

SUMMARY

Therapeutic benefits of velvet antler have not been well-demonstrated. A small amount of experimental research suggests potential use for improving joint function or wound healing; however, larger, independent trials have tended to produce negative results. The recent research finding CWD prions in elk velvet adds risk for human exposure to the disease.¹⁴ When velvet antler is farmed the removal of velvet causes stress and pain to the animal that should be mitigated through refinements of husbandry and the use of short- and long-term analgesia. The effectiveness of lidocaine as a short-term local anesthetic has been demonstrated. Further research is required to ensure drug residues are avoided, develop postoperative analgesic protocols. If compression bands are used there should be a one hour delay between placement and removal of the antler to ensure desensitization of the tissue.

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