

Devil's Claw – a natural substitute for diclofenac?

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Diclofenac is an NSAID (non-steroid anti-inflammatory drug), and one that is artificially synthesised. It has both medical (in humans) and veterinary (in animals) uses, for pain-killing, reducing inflammations and fevers and relieving arthritis and rheumatism. Its connection with vultures in the Indian subcontinent, indeed as the cause of their catastrophic decline, was discovered by Lindsay Oaks and colleagues early in 2003 (Oaks *et al.* 2004). Visceral gout, i.e. the accumulation of uric acid crystals on organs particularly the kidneys, was long recognised as a possible side effect for some humans and now a certain side effect in vultures.

Once discovered, the action was on two fronts, firstly to get diclofenac banned in the Indian subcontinent for veterinary use, and secondly to find a substitute that is just as effective.

Quickly this latter choice fell to meloxicam, which was shown to be safe to vultures (Swan *et al.* 2006) and to other scavenging birds (Cuthbert *et al.* 2007). Said to be one of the “newer NSAIDs”, meloxicam has similar analgesic, antipyretic and anti-inflammatory properties as diclofenac (Naidoo 2007). However it is “three times as expensive” (Naoroji 2006) as diclofenac, though still considered to be available “at an affordable price” (Swarup *et al.* 2007). Will it in fact be able to take over from diclofenac in time to allow the vultures in the subcontinent to recover? But see Prakash *et al.* (2012) for hints already of a possible recovery.

Meanwhile in southern Africa we have an indigenous plant that is already well known for its treatment of rheumatism and arthritis, and as an analgesic for pregnancy and labour

pains (van Wyk *et al.* 1997). This is Devil's Claw *Harpagophytum procumbens* or Grapple plant. It is used both in traditional healing in southern African societies and in western medicine and, according to CITES (2002), Germany is the main importing country. Whereas the fruit is literally diabolical to look at and feel, it is actually the tubers on the roots that are collected, sliced, dried and powdered. Infusions, tablets and ointments are made from the tubers. "Medicinal plants are something of the future, not of the past!" (van Wyk *et al.* 1997).

In southern Africa there are in fact two species of Devil's Claw, the one mentioned above and *H. zeyheri* (Ihlenfeldt 1988). Both prefer sandy soils and can be found in Namibia, Botswana, Northern Cape and Limpopo area (South Africa), and south-west (Tuli) and north-west (Victoria Falls) Zimbabwe. It is a low lying herbaceous plant with pretty pink flowers (Fig. 1) that develop into that diabolical fruit. PJM had his first experience with *Harpagophytum* in 2000 at the 11th CoP of CITES in Nairobi, Kenya. Then, Germany had

expressed a concern about the sustainable harvest of the plant in Namibia, and indeed proposed that it be put on to Appendix II of the CITES (Anon. 2003). This idea was opposed by Namibia and other range states in southern Africa and a compromise agreed to. Range states were to monitor their harvests and maintain the sustainable use of Devil's Claw.

Nine glycosides have been isolated from *procumbens* (Chigome *et al.* 2008) at least five of which are said to be pharmacologically active. Our hypothesis is that Devil's Claw should be as effective in animals (particularly draught animals, e.g. cattle *Bos taurus/indicus* and water buffalo *Bubalus bubalis*) as it is in humans. We note that very recently studies have begun to compare the clinical efficacy of Devil's Claw with diclofenac on treatment of knee osteoarthritis in humans (www.irct.ir). Perhaps this is because of the known many possible side effects of diclofenac (information paper by Lincoln Pharmaceuticals, Ahmedabad, India).

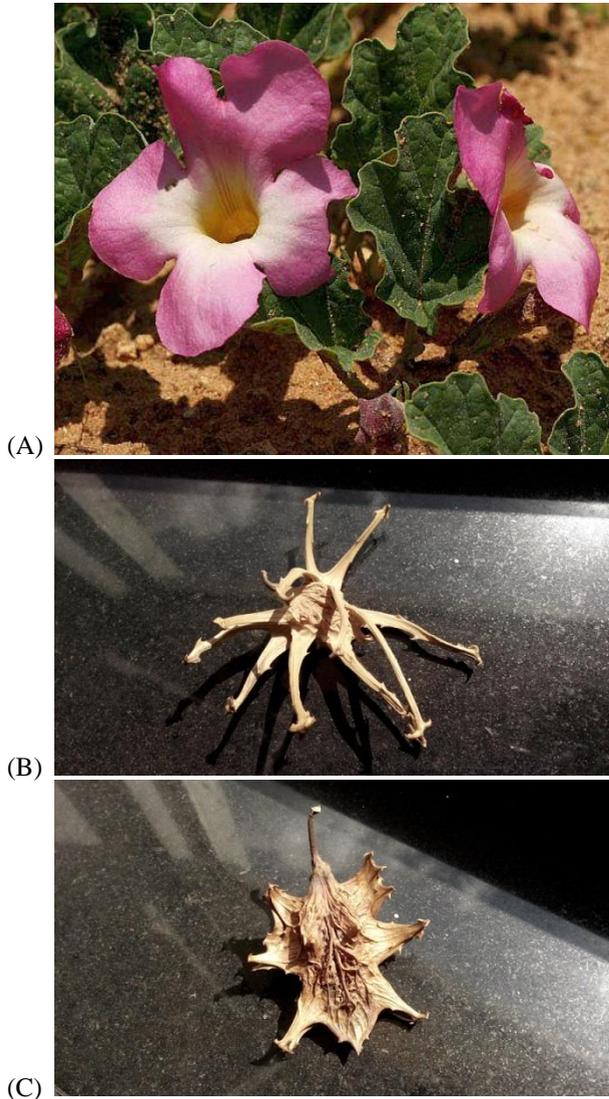


Figure 1: (A) Specimen of *Harpagophytum zeyheri* in Hwange National Park (Photo: Bart Wursten); (B) & (C) Fruits of the two species of *Harpagophytum*, the long-limbed *procumbens* (B) and the squarer *zeyheri* (C). (Photos: Farai Chikomba)

Clinical use of Devil's Claw extract, however, has been shown to be safe, and fewer adverse side effects accompany treatment from Devil's Claw (Chrubasik *et al.* 1999). Therefore we propose that some kind of preparation from Devil's Claw (e.g. capsules, tablets, infusion) be used on draught animals in the Indian sub-continent. As yet, "no side effects have been reported" in humans (van Wyk *et al.* 1997). Verification of the safety of Devil's Claw extracts for humans has yielded positive results

showing few side effects and usually limited to gastro-intestinal upset (Anon. 2008), though the 'acid test' of course will be its impact in cattle and buffalo.

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