



Mr Tonio Borg
European Commissioner for Health and Consumer Protection
European Commission
B-1049 Brussels, Belgium

Re: Comment on the fatal effect of diclofenac and other non-steroidal anti-inflammatory drugs on vultures and other avian scavengers.

The Raptor Research Foundation (RRF) is a non-profit scientific society whose primary goal is the accumulation and dissemination of scientific information about raptors (hawks, eagles, falcons, vultures and owls). This information is used to inform the public (both scientific and lay) about the role of raptors in nature, and to promote the conservation of raptors whose populations are threatened by human activities. The RRF's membership consists of academic researchers, government agency employees, professional biologists, natural resource managers, students, and many others interested in birds of prey. The RRF was organized in 1966 and started publishing a scholarly journal, *The Journal of Raptor Research*, in 1967. Though based in the North America, the RRF is an international organization with nearly 1,000 members, currently including members in over 50 countries.

Given the primary focus of our foundation, we are compelled to provide the following information and position statement on the use and effect of the non-steroidal anti-inflammatory drug (NSAID), diclofenac, and closely related pharmaceuticals. The fatal effect of residual amounts of the drug diclofenac in treated livestock on three *Gyps* vulture species in South Asia was first discovered and announced in 2003⁴ and published in the journal *Nature* in 2004⁵. Modeling demonstrated that the catastrophic decline in abundance of these species over the previous decade could be caused by diclofenac-treated carcass encounter rates by vultures of between 0.13 to 0.77% (one contaminated carcass in 760 to 130 uncontaminated carcasses)⁶. Field surveys measured carcass contamination rates averaging 10% in India³² and evidence of diclofenac poisoning in vultures across Pakistan,^{5,18} India and Nepal⁷ left no doubt about the feasibility of this new source of vulture fatality as the cause of the species' catastrophic rates of decline.

Prolific research and publications⁸⁻⁶⁴ since then have corroborated these findings and documented evidence that national bans on the veterinary use of diclofenac in 2006 by the governments of India, Pakistan and Nepal. These actions have resulted in a reduction, and possible halt in some locations, to the vulture population declines^{55,58} that were measured at rates of up to 30% annually prior to the bans^{1-3,18}. While one drug (meloxicam) has been identified as a vulture safe alternative to diclofenac³⁰, several other NSAIDs have similarly been identified to be fatal to vultures at low concentrations^{42,43} illustrating the global need for extensive testing of pharmaceuticals prior to authorization for use in situations where drug residues may enter the food chain.

The abundant evidence for the fatal effect on vultures of residual amounts of diclofenac in livestock carcasses indicate the unsuitability of this and similar drugs in the veterinary treatment of animals that may become food for vultures or other avian scavengers. Worldwide, the licensing of diclofenac and related drugs for use in situations where carcasses of treated animals could enter the food chain should first consider the scientific evidence of the deleterious effects on the survival of vultures and other potentially sensitive species. The consequences of elevated fatality rates on the survival of vultures, some of which are already listed as endangered or critically endangered, could result in otherwise avoidable extinctions or costly species restoration efforts such as are now occurring in South Asia⁶⁴.

A list of references is attached as supporting documentation. We appreciate your consideration of our statement of concern as to the use of diclofenac and related pharmaceuticals.

Sincerely,

A handwritten signature in black ink, appearing to read 'Clint Boal', written in a cursive style.

Clint W. Boal, Ph.D.
President, The Raptor Research Foundation
28 Aprils 2014

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