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Research Article

DICLOFENAC –A CULPRIT FOR DECLINE OF VULTURES

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ABSTRACT

The three species-Oriental white-backed, long-billed and the slender-billed vulture-classified by IUCN as critically endangered, have reduced by more than 97% between 1992 and 2007. Long-billed vultures are now thought to number about 45,000 and slender-billed vultures just 1,000. The vulture population has steeply declined over the last 20 years or so, and there is a need for accelerated efforts to save these large, magnificent birds, from the many insidious threats they've been facing. When the birds eat carcasses of animals treated with the drugs, they experience acute kidney failure and die within days. India's introduction of diclofenac in the 1990s proved immediately calamitous to the country's vultures. One species, the Indian white-rumped vulture (*Gyps bengalensis*), declined by 99.9 percent. The Indian vulture (*G. indicus*) and slender-billed vulture (*G. tenuirostris*) experienced similar declines. All three species were classified as critically endangered in 2000. Vultures need more intervention-and quickly, if they are expected to survive.

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INTRODUCTION

Vultures, known locally as 'gidh', are said to be 'nature's recyclers'. Their resistance to bacterial and viral diseases means they are able to feast on dead animals, thereby renewing and cleansing the ecosystem. The white-backed vulture species, commonly found in Pakistan, India and Nepal, has declined by more than 99% since the 1990s. Thus, vultures have been mandated 'critically endangered' by the International Union for Conservation of Nature, an international organisation working towards conservation of such species. Experts from the Indian Save Asia's Vultures from Extinction programme estimate that in the 1990s, there were as many as 40 million vultures in India, consuming roughly 12 million tonnes of carrion annually. With a sharp drop in the number of vultures, this disposal system for dead animals has all but disappeared, thus raising health and environmental concerns. During the period of 2000-2003 there was high adult and sub adult mortality of vultures (5-86%) and population decline (34-95%) associated with visceral gout and renal failure. Biologists from the RSPB and ZSL tried to discover the cause and thought it was probably a disease-but was wrong and it was the Peregrine Fund who discovered that, Diclofenac Sodium, NSAID drug used as anti-inflammatory, analgesic and antipyretic drug in domestic livestock. The use of veterinary diclofenac, a pain-killing anti-inflammatory medicine given to livestock led to the unintentional but almost complete collapse of many vulture populations in Asia in 1990s and early 2000s. Tiny amounts of

diclofenac could kill vultures. A single feed from the corpse of a fairly recently-treated cow would be enough, when scaled up across Southeast Asia, to cause the precipitous decline. Then evidences were presented that showed the direct relationship between the residues of Diclofenac Sodium (Anti-inflammatory drug) and renal failure in vultures. Renal failure is the most common cause of visceral gout in birds, because renal failure leads to hyperuricaemia and deposition of uric acid within and on the surface of the internal organs of the body. Renal failure can be caused by metabolic, degenerative, toxic or infectious disease.

Between 2011 and 2014, 44 vultures comprising two species, namely Indian white-backed vulture (32) and Himalayan griffon *Gyps himalayensis* (12) were collected dead from Gujarat, Assam, and Tamil Nadu on an opportunistic basis. Kidney and liver tissues and gut content were analysed for diclofenac. Prakash V (1999), Rajamani J and Subramanian M (2015). Of the 32 dead white-backed vultures analysed, 68.75% of them had diclofenac ranging from 62.28 to 272.20 ng/g. Fourteen white-backed vultures had diclofenac in kidney in toxic range (70-908 ng/g). Of 12 Himalayan griffon studied, 75% of them had diclofenac in the range of 139.69 to 411.73 ng/g (Ogada *et.al.*2012). DL. Himalayan griffon had significantly higher levels of diclofenac in tissues than Indian white-backed vultures. It is possible that 14 of 29 white-backed vultures and 9 of 12 Himalayan Griffon included in this study died due to diclofenac poisoning. Oriental white-

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backed vulture, a species that in the 1980s was so abundant it was one of the most common large birds of prey in India, started falling dramatically. The birds were often found dead next to the carcasses of livestock and it didn't take too long before researchers began to find a link.

The normal dose of the drug for animals is about 11 ml for three to four days while human dose is only 3 ml per dose. It is, therefore, proposed that the drug for human use is packed in single doses only to avoid diversion in the treatment of animals." But so far even after one year, everything is status quo. "There is a huge amount of spillover mainly of multi dose human diclofenac injectable in veterinary sector. The sudden collapse of the natural animal (vultures) disposal system in India has had obvious and multiple consequences on human beings. It creates environmental imbalance that affect human life. As carcasses once eaten by vultures now rot in village fields. Due to that, drinking water has become seriously contaminated which endangers human life.

CONCLUSION

Galligan has an interesting idea for making more progress: continue to allow diclofenac to be sold for human use (it's good for arthritis) but limit it to vials no larger than three milliliters. Papers in scientific journals including Science and Nature have supported a ban and stated that veterinary diclofenac poses an unnecessary threat for the vulture populations.

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