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Evaluating physiological stress in Asiatic black bears (*Ursus thibetanus*) rescued from bile farms in Vietnam

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Abstract

Asiatic black bears (*Ursus thibetanus*) face chronic stress in bile farms. In this study, we investigated whether bile-farmed bears show significantly high levels of stress at rescue and whether stress levels reduce over time in a bear sanctuary where the bears are supported with environmental enrichment and veterinary care to improve animal welfare. We measured stress hormone levels using faecal cortisol metabolites (FCM) in 16 Asiatic black bears freshly rescued from bile farms in Vietnam. Fresh faeces were collected from each bear on the rescue truck and on a weekly basis for a 22-week study period at a bear sanctuary in Vietnam. Results showed that for all 16 rescued bears (with one exception) individual FCM levels from truck samples were above mean baseline FCMs of bears previously rehabilitated to a bear sanctuary. This suggested the majority of the rescued bears were still capable of showing a stress endocrine response during the rescue operation despite being exposed to conditions causing chronic stress in bears on bile farms. Results showed that mean FCM levels of the rescued bears differed significantly between time-periods (higher at the rescue [on truck samples] compared to week 22 samples) and mean FCM levels showed an overall decline over the first 22 weeks after they arrived at the bear sanctuary. The bears also demonstrated acute FCM stress responses to management interventions at the sanctuary, such as veterinary health checks and transportation. In conclusion, rescued bears tend to modulate their stress endocrine response after rehoming at the bear sanctuary. This is an important result, indicating that the rescue effort and rehabilitation of bile-farm bears is effective. Whether this also coincides with behavioural adjustments in rehabilitating bears (eg lessening of stereotypic behaviour) warrants further investigation.

Keywords: animal welfare, bear bile farming, rehabilitation, rescue, stress, *Ursus thibetanus*