

VITAMIN D METABOLISM IN ASIAN ELEPHANTS (*ELEPHAS MAXIMUS*)

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Abstract

Knowledge about the normal metabolism and involvement of vitamin D in elephant calcium homeostasis is paramount to understanding the possible role of vitamin D in Asian elephant (*Elephas maximus*) health, as well as to informing accurate diet formulation. Disorders confirmed or suspected to be related to calcium homeostasis have been reported with some frequency in managed elephants, including rickets in calves, hypocalcemic tetany, and dystocia. Although a few reports measuring serum vitamin D in managed elephants exist, investigation into key elements of vitamin D metabolism in elephants has not previously been performed. Basic aspects of vitamin D metabolism in Asian elephants were explored in three research studies, including seasonal monitoring of vitamin D analytes in a herd of elephants maintained at a high latitude, evaluation of the effect of oral vitamin D supplementation, and documentation of vitamin D analytes in a herd of Asian elephants managed at a low latitude. Our research findings provide a foundation of knowledge regarding vitamin D metabolism in Asian elephants, and will help to inform and guide husbandry, nutrition, and future research recommendations.