

# MANAGING DIABETES THROUGH DIET IN BLACK-FOOTED TREE RATS (*MESEMBRIOMYS GOULDII*) AND GREATER STICK-NEST RATS (*LEPORILLUS CONDITOR*)

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## Abstract

Clinical and pathological signs consistent with diabetes mellitus (DM) were observed in a collection of Black Footed Tree Rats (BFTR; *Mesembriomys gouldii*) and Greater Stick-Nest Rats (GSRN; *Leporillus conditor*) housed at Taronga zoo. Review of the medical records of eighteen BFTR between 1991 and 2014, and thirty eight GSRN between 1995 and 2014, revealed a high frequency of animals with cataracts, obesity, hyperglycemia and glucosuria. A diagnosis of DM was made in 78% of BFTR and an estimated 55% of eleven GSRN which had sufficient data for assessment. Obesity is a well-established risk factor for T2DM across species. Initial conservative attempts to reduce weight by lowering energy density were unsuccessful in these rodents. A review of the literature suggested that T2DM in BFTR and GSRN was similar to several related South American and North African rodents also prone to T2DM when fed a relatively high energy rodent pellet. Intervention by feeding a closer approximation to the native diets had alleviated, even prevented signs of T2DM in some of the reviewed species. The BFTR and GSRN at Taronga zoo were put on a strict low glycemic diet similar to the nutrient composition of their low carbohydrate, high fibre native diets. Significant reductions in body weight, blood and urine glucose resulted. After two months on the diet, 89% of all cases became normoglycemic. The results of this dietary intervention support the initial diagnosis of T2DM and provide evidence for dietary treatment to manage DM in these species.