The energy source imbalance in sunflower seeds promotes ketone body formation in rose-ringed parakeets (*Psittacula krameri*).

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Objectives: Parrots are commonly fed seed mixtures, displaying a profound preference towards fat-rich seeds, such as sunflower seed. This feeding behaviour leads to an extremely high fat, low carbohydrate content of the ingested fraction. High ingestion of fat necessitates a proportional supply of carbohydrate to feed the citric acid cycle. As a consequence, acetyl-CoA, an intermediate metabolite in fatty acid oxidation, is diverted from the citric acid cycle towards ketone production if fat and carbohydrate oxidation is imbalanced (Klasing, 1998). But next to carbohydrate, also glucogenic amino acids may fuel the citric acid cycle. The aim of the current trial is to evaluate ketone formation and metabolisation of glucogenic aminoacids in parrots fed sunflower seeds, which are extremely rich in fat and low in carbohydrate, and extruded pellets, which are low in fat but high in carbohydrate.
Methods: Eight adult rose-ringed parakeets (*Psittacula krameri*) were individually housed in indoor wire cages. Two test diets, sunflower seed and a pelleted diet (Nutribird P15, Versele Laga Ltd.), were fed *ad libitum* in a 2×2 cross-over design (7day adaptation, 7day collection period; daily intake of feed and water). Fasted blood samples were obtained at the end of each collection period and plasma analysed for free amino acids and acylcarnitines using quantitative electrospray tandem-MS.
Results: Both 3-OH-butyrylcarnitine and the 3-OH-butyrylcarnitine:acetylcarnitine ratio were significantly higher when fed sunflower seeds. This increase in ketone production suggests incomplete oxidation of the high fatty acids at the level of the citric acid cycle. In addition, daily intake of for instance methionine, an essential, glucogenic aminoacid, was similar between test diets, but significantly lower in plasma when fed sunflower seeds.
Conclusions: The data provide evidence that a diet high in fat and low in carbohydrate increases the catabolism of amino acids and leads to an increase of ketone body formation in psittacine birds.
References: Klasing, 1988. Comparative Avian Nutrition. CAB International. 350 pp.