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Energetic and nutritional composition of reptilian eggs

Hatching of *Varanus albigularis*
(picture by S.Kuperus)

Abstract:
Reptilian eggs can be considered as packages loaded with energy and nutrients. Producing these packages requires nutritional support. To give a sound nutritional advice for reproducing reptiles one needs to know the nutritional contents of eggs in the first place. During this research 20 reptile egg clutches from 13 different species were analysed for Gross Energy (GE), Dry Matter (DM), Ash, Crude Protein (CP), Calcium (Ca), Phosphorous (P) and Magnesium (Mg). Methods used were Bomb Calorimetry, Kjehldahl analysis, Proximate analysis and Atomic Absorption Spectroscopy. Crude Fat contents were calculated by difference. Egg contents and shells were separately analysed.
The average GE values for the egg contents varied from 25.1 kJ/g DM to 28.5 kJ/g DM. Soft egg shells contained on average 15.6 kJ/g DM. The GE contents of hard egg shells could not be determined. The CP percentage of the egg contents varied from 40% to 58%. CP in shells varied from 62% in soft shells to 11.7% in hard shells.
In soft shelled eggs Ca values in the egg contents averaged 105 mg/g DM and in hard egg shells 370 mg/g DM.
Before these results can be translated into dietary advice more insight is necessary in the reproductive physiology of reptiles. How and in what time the eggs develop in the reptilian body; are energy and nutrients necessary for egg development directly taken from food or from body supplies; and what is the best moment to support egg development nutritionally- these questions which are worthwhile to answer in future research. But also the relatively small database developed in this project needs further extension.

Keywords
reptiles; eggshell; egg contents; gross energy; crude protein; lipid; calcium; magnesium; phosphorous