

NUTRITIONAL QUALITY OF HYPOGEOUS FUNGI FOR SMALL MAMMALS

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Hypogeous (below-ground) fungi are a major dietary item seasonally for a wide range of small mammals. This is postulated to reflect high nutritional quality, an hypothesis supported by high concentrations of total nitrogen in many fungi. However, Cork and Kenagy (1989), studying a North American species, showed that much of the total nitrogen can be of low quality or unavailable, and suggested that the high concentration of structural polysaccharides in hypogeous fungi minimises intake and digestibility of energy by small mammals. We present here some analyses of hypogeous fungi that are important to Australian small mammals.

Whole sporocarps of four species (*Rhizopogon luteolus*, *R. rufescens*, *Hysterogaster fuisporous* and *Hymenogaster* sp.) and the edible core of two others (*Mesophellia glauca* and *M. pachytrix*) were extracted with pepsin then neutral detergent to estimate cell-wall concentration (Cork and Kenagy 1989). Total nitrogen was partitioned into total-N, non-protein-N, cell-wall-N and protein-N by Kjeldahl analysis of whole samples, trichloroacetic acid extracts and isolated cell-walls (Cork and Kenagy 1989).

Component	Fungal species					
	M. g	M. p	R. l	R. r	H. sp	H. f
Cell contents (g/kg)	397.9	320.8	708.9	473.8	678.6	601.2
Cell walls (g/kg)	602.1	679.2	291.1	526.2	321.4	398.8
Total nitrogen (g/kg)	117.8	118.9	388.0	258.0	418.3	446.2
% protein-N	6	18	29	36	0	3
% non-protein-N	26	26	8	13	16	23
% cell-wall-N	68	56	63	51	84	74

Although total nitrogen concentrations were high, 51-84 % was as non-protein nitrogen (probably urea and/or ammonia) and 8-26 % was associated with cell-wall constituents. Such diets are unlikely to be of high quality for small, simple-stomached mammals like bandicoots, although they might be of higher quality for coprophagic species (e.g. some rodents) or foregut-fermenters (e.g. wallabies). The reason for selection of hypogeous fungi by small mammals might differ between mammal species and probably is influenced more by the relative availability of other foods than the nutritional composition of the fungi alone (Cork and Kenagy 1989).

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