

Organic matter in termite mounds of an Amazonian rain forest

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Termites play an important role in organic matter and nutrient cycles of tropical ecosystems, but since it is thought that termites are unable to decompose lignin in a significant scale, lignin should accumulate in their mounds. This study was designed to investigate how termites alter the organic matter in the rain forest around Manaus, Brazil. Samples were collected from the outer and inner parts of typical termite nests of *Nasutitermes*, *Termes*, *Embriatermes*, *Cornitermes*, *Anoplotermes*, and *Constrictotermes* genera, as well as from the surrounding topsoil (0-10 cm) and potential wooden food. Chemical analysis is still in progress but includes the determination of organic C, N, lignin-derived phenols, and carbohydrates. The termite nests were significant sinks for organic matter and its associated nutrients. The organic C contents ranged between 100 and 500 g kg⁻¹ in the nests, compared to 17 to 42 g kg⁻¹ in the surrounding topsoils. Lignin contents of the mounds were even higher than in wood, thus giving support to the assumption that lignin is accumulated in preference to other organic compounds. Except for *Nasutitermes ssp.*, there was no significant difference in organic C between the samples from exterior and interior of the nests. In the mounds of the xylophageous *Nasutitermes ssp.*, however, the nest interior had significantly lower C contents and C/N ratios than the exterior. This seems to be accompanied by lower lignin contents and higher degree of lignin side-chain oxidation. We suggest that the interior part of the nests comprised regions of higher organic matter turnover including degradation of lignin. As lignin oxidation might not have happened in the gut of the termite itself, more research is required to clarify the role of symbiotic microorganisms to the biochemical transformations of organic matter. This might be achieved by future analyses of different microbial biomarkers, such as amino sugars.