

Characterization of Cellulolytic Activity and Microbiota of Roach (*Periplaneta americana* L.) Fed with Cane Bagasse

An important environmental issue is to reduce the use of fossil fuels. Lignocelluloses (composed of cellulose, hemicellulose and lignin) are a potential source of clean energy. Termites (which are phylogenetically related to cockroaches) produce beta-glucanase and also get enzymes capable of cellulose breakdown from the gut flora. However the study of cockroaches as potential sources of enzymes for lignocellulose breakdown is mostly overlooked. This study shows cellulolytic activity and enzyme expression in different tissues and gut contents of cockroaches under different diets. Adult female cockroaches were individualized and received different diets. After a period of seven days they were dissected and their guts were segmented and used for cellulolytic activity assays and RNA extraction. Cellulolytic activity found in the midgut is on average 65% higher than in other tissues. Cellulolytic activity found in the hindgut of cockroaches fed bagasse is on average 80% higher than with other diets. Aiming to study the diversity of the gut microflora, we randomly sequenced rDNA (16S) of harbored bacteria of cockroaches exposed to different diets. Sequences were subject to rarefaction analyses and LIBSHUFF quantitative statistics to verify coverage and similarity between libraries. Construction phylogenetic tree is in progress.

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