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EVALUATION OF SIX METHODS FOR TOTAL DNA EXTRACTION FROM GUT EARTHWORMS FOR MICROBIAL COMMUNITY DIVERSITY AND METAGENOMICS

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DNA extraction is a crucial step for many molecular studies including microbial community diversity in earthworms gut. A variety of methods have been used for total DNA extraction from earthworms gut, including commercial kits and manual methods. Extraction methods need to be evaluated for their efficiency, as DNA degradation and fragmentation during extraction and other effects. In this work genomic DNA was extracted from three different regions of the earthworm gut, species *Perionyx excavatus*, using six different methods, including commercial kits and manual procedures using SDS or CTAB. The extracted DNA samples were compared for both yield and DNA quality. Samples were also tested for efficient amplification of 16S rRNA by PCR. Earthworm foregut samples had the lower DNA yield independent of the method used for DNA extraction. Five of the methods had acceptable yields in DNA extraction for samples from hindgut. All tested methods led to a fragmented DNA, but one of the manual methods yield a high molecular weight DNA. Only samples obtained from two of the manual methods and one of the commercial kits were successful for DNA amplification to all earthworm gut regions. Results indicate that three of methods could be used for the extraction of total DNA with the purpose to analyze the microbial biodiversity of earthworm gut. However, only one of these methods is suitable for metagenomic studies due to the high molecular weight DNA obtained.

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