Composting of Residues from Agroalimentary Industries: Evaluation of the Process by CPMAS ^{13}C-NMR

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The aim of the present results is to evaluate the changes of organic matter during the composting process of residues from agroalimnetary industries (RAI) by means of ^{13}C cross polarization magic angle spinning (CPMAS) NMR spectroscopy and to estimate the behaviour of composted RAI after landfilling. 13C NMR spectroscopy displayed a preferential biodegradation of carbohydrates as well as an accumulation of aliphatic chains (cutin- and suberin-like). This preferential biodegradation of the organic fractions reduces the landfill emission potential. By Dipolar dephasing can be demonstrated the presence of tannins in the samples. The tannins probably were responsible for the behaviour of the different piles during composting. On the basis of this study it may be concluded that CPMAS ^{13}C-NMR supported by other techniques, as fluorescence, FT-IR and Termogravimetry could provide information about the evolution and stabilization of the organic matter during the composting process in order to avoid contamination problems after landfilling.

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