A NOVEL CARBON-14 "SOLVENT-FREE"-LABELING PROCEDURE WITH DIETHYL MALONATE

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The malonic synthesis is known as one of the easiest ways to introduce the isotopic label into alkyl radical of a great variety of compounds with pharmacological interest. Nevertheless, main handicaps of this preparation concerning to the use of DMF as solvent media in alkylation reactions provoking large and tedious work-up, limit the use of malonate ester as organic intermediate in carbon-14 labelled compound synthesis.

The present work reports a novel labelling procedure for dialkylmalonate preparation under “solvent-free” conditions in the presence of phase transfer catalyst. Improved radiochemical yields (about 70%) compared to classic preparations in DMF are achieved in only 10 minutes at 130°C. General labelling procedures for alkyl bromides is reported. Radiochemical purity by HPLC and analysis conditions using online radioactivity detection is described.

Radiochemical preparations through this method show important advantages regarding purification of the final labelled compound and, as no organic solvent is used, waste management. A simple two-step and easy to performance chromatography leads to pure dialkyl malonates.

This method could be especially useful in short-live-isotope labelling.
The alkylation reaction of diethyl malonate assisted by microwaves is under study.