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Synthetic Decarboxylated S-Adenosyl-L-methionine as a Substrate for Aminopropyl Transferases

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Synthetic decarboxylated S-adenosyl-L-methionine (dcAdoMet), a mixture of the absolute configuration of S and R at the sulfonium center, was evaluated as a substrate for the measurement of spermidine synthase activity. The diastereomers were separated by HPLC with an isocratic elution, and the constant for racemization at the sulfur was determined to be $2.4\times10^{-6}s^{-1}$ at 37°C and pH 1.5 for the first-eluted biologically active isomer (S-dcAdoMet) and $2.0\times10^{-6}s^{-1}$ for the second-eluted biologically inactive isomer (R-dcAdoMet). The peak area ratio of S-dcAdoMet to R-dcAdoMet of 48 to 52 in HPLC supported the different racemization constants. Similar substrate activity of dcAdoMet to that of S-dcAdoMet was demonstrated by enzymatic spermidine synthesis. It was shown from the result that the racemized [methyl-^{14}C]dcAdoMet prepared in this report was useful for measuring spermidine synthase activity.