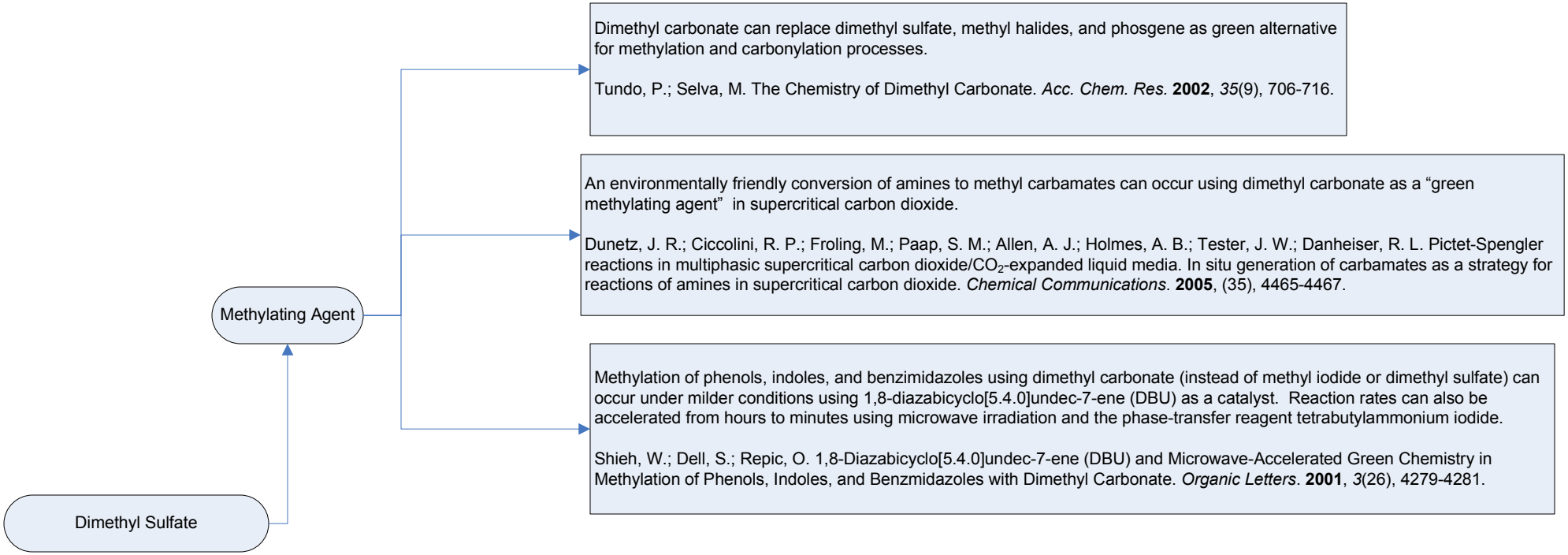
Dimethyl Sulfate
Methylating Agent
Dimethyl carbonate can replace dimethyl sulfate, methyl halides, and phosgene as green alternative for methylation and carbonylation processes.
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An environmentally friendly conversion of amines to methyl carbamates can occur using dimethyl carbonate as a “green methylating agent” in supercritical carbon dioxide.
Dunetz, J. R.; Ciccolini, R. P.; Froling, M.; Paap, S. M.; Allen, A. J.; Holmes, A. B.; Tester, J. W.; Danheiser, R. L. Pictet-Spengler reactions in multiphasic supercritical carbon dioxide/CO_2-expanded liquid media. In situ generation of carbamates as a strategy for reactions of amines in supercritical carbon dioxide. *Chemical Communications*. **2005**, (35), 4465-4467.
Methylation of phenols, indoles, and benzimidazoles using dimethyl carbonate (instead of methyl iodide or dimethyl sulfate) can occur under milder conditions using 1,8-diazabicyclo[5.4.0]undec-7-ene (DBU) as a catalyst. Reaction rates can also be accelerated from hours to minutes using microwave irradiation and the phase-transfer reagent tetrabutylammonium iodide.
Shieh, W.; Dell, S.; Repic, O. 1,8-Diazabicyclo[5.4.0]undec-7-ene (DBU) and Microwave-Accelerated Green Chemistry in Methylation of Phenols, Indoles, and Benzmidazoles with Dimethyl Carbonate. *Organic Letters*. **2001**, *3*(26), 4279-4281.