Catalytic Effect of Basic Alumina in the Dehydrogenation of 1,4-Dihydropyridines with Tetrabutylammonium Peroxydisulfate

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4-Alkyl- or 4-aryl-1,4-dihydropyridine derivatives were oxidized to the pyridine derivatives by tetrabutylammonium peroxydisulfate \((n\text{-Bu}_4\text{N})_2\text{S}_2\text{O}_8\) (TBAPD) in combination with basic alumina in refluxing acetonitrile and also in the absence or presence of basic alumina under microwave irradiation. The presence of basic alumina plays an important role in the reaction mechanism. Whereas oxidation under thermal condition is assumed to occur through an ionic mechanism, ionic and also radical mechanisms are proposed for the reactions under microwave irradiation.

Key words: 1,4-Dihydropyridines, Heterocycles, Oxidation, Peroxydisulfates, Pyridines