SYNTHETIC APPLICATIONS OF REACTIONS OF N-SUBSTITUTED PYRROLES AND INDOLES WITH PALLADIUM ACETATE

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A new method for synthesizing o-(2-pyrrolyl)- and o-(2-indolyl)-benzoic acids and 2,2'-bipyrroles via oxidation of N-substituted pyrroles and indoles by palladium acetate is described. These compounds are of interest in connection with the existence of biologically active substances, e.g. o-aminobenzoic acid (vitamin L_1) and prodigiosin.

Treatment of 1-aroylpyrroles with palladium acetate in acetic acid at 110°C for 8-15 hr under N_2 afforded ring-closed compounds (1) and 2,2'-dimeric compounds (2). Under similar conditions oxidation of 1-aroylindoles gave (5) and (6), but no 2,2'-dimeric compounds were obtained. Treatment of 1 and 5 with t-BuOK in t-BuOH at 82°C for 12-15 hr under N_2 afforded (3) and (7), respectively. Under similar conditions 2 reacted with t-BuOK in t-BuOH to give (4). Oxidation of 2-acyl-1-methylpyrroles by palladium acetate gave (8) and (9).