COUPLED OXIDATION OF 4-ETHYL PYRIDINE WITH HYDROGEN PEROXIDE TO 4-VINYL PYRIDINE AND ITS N-OXIDE

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The synthesis of pyridine bases and their derivatives (4-vinyl pyridine) through a line of quite simple transformations, for example, the dehydration of relevant more saturated compounds, as well as the synthesis of their N-oxides are bound to be of a great interest.

From this point of view, it was first studied the method for 4-vinyl pyridine and its N-oxide synthesis. As a result of these studies, depending on the conditions of 4-ethyl pyridine oxidation with hydrogen peroxide, reaction was reported to carry out in two routes: in one route 4-vinyl pyridine was formed in yield equal to 44.3% and selectivity - 96%; in another route N-oxide of 4-vinyl pyridine was formed in yield equal to 33% and selectivity not less than 98%.

It was demonstrated a high efficiency of hydrogen peroxide as the generator of a highly reactive intermediate — HO₂-radical capable depending on the conditions of 4-ethyl pyridine oxidation, to change the mechanism of oxidation both in the way of 4-vinyl pyridine and N-oxide of 4-vinyl pyridine formation.

The hallmark of 4-ethyl pyridine coupled oxidation is the fact that the process runs under atmospheric pressure, without any catalysts and polymerization inhibitors applied, in the gaseous phase and by a streamlined technology.