

New effective technologies for preparation of biological active esters of the isovaleric acid by isobutylene hydroalkoxycarbonylation

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We applied hydroalkoxycarbonylation of isobutylene with carbon monoxide and mono(noly)hydric alcohols in the presence of catalytic systems based on the phosphinopalladium complexes ($\text{Pd}(\text{PPh}_3)_4\text{-PPh}_3\text{-TsOH}$, $\text{Pd}(\text{Acac})_2\text{-PPh}_3\text{-TsOH}$) to prepare of biological active isovaleric acid esters: l-menthylisovalerate (possesses spasmolytic properties; it used as main active component of the spasmolytic medicine "Validolium"), ethylisovalerate (intermediate product for obtaining sedative and spasmolytic medicines "Ethyl ester of α -bromisoveleric acid" and "Corvololium"), cyclohexylisovalerate (bactericide activity (against *Staphylococcus aureus*, *Escherichia coli*, *Pseudomonas aeruginosa*); antifungus activity (against *Candida albicans*)), benzylisovalerate (bactericide activity (against *Escherichia coli*, *Staphylococcus aureus*)) and monoglyceride of isovaleric acid (bactericide activity (against *Escherichia coli*, *Pseudomonas aeruginosa*); antifungus activity (against *Candida albicans*)). The reaction were performed in a stainless-steel autoclave (20 atm, 100°C, 4 h). The reaction was performed without solvent. The [alcohol]:[isobutylene]:[Pd]:[PPh₃]:[p-TsOH] ratio was 435:565:1:7:12. The yields of the target products were 14,7-96,0%. The selectivity in linear reaction products was 100%. The proposed methods are highly economical and may be used for commercial production of the mentioned above biological active esters of the isovaleric acid. Optimal technological parameters for carrying out the processes were tested at the pilot plant. The cost of manufacturing the products according to the new technology is 2-3 times less than the cost of their production according to the existing at the present technologies.

Biography

Kh. A. Suerbaev has completed his postgraduate cours at the age of 30 years from Institute of Elementorganic Compounds of the USSR Academy of Sciences (Moscow) and 1997 year he defended his doctoral dissertation from Al-Faraby Kazakh National University (Almaty). He is the Professor of Al-Faraby Kazakh National University. He has published more than 100 papers in reputed journals.

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