



Dependence of the productivity of the  $\text{Pd}(\text{Acac})_2\text{-PPh}_3\text{-TsOH}$  catalytic system on the ethanol/isobutylene molar ratio. Amount of  $\text{Pd}(\text{Acac})_2 = 0.035 \text{ g}$  (0.115 mmol). Isobutylene :  $\text{PPh}_3$  : TsOH molar ratio = 550 : 3 : 12.  $p\text{CO} = 3.0 \text{ MPa}$ ,  $T = 100^\circ\text{C}$ . Reaction time, 5 h.

thoxy- and hydroethoxycarbonylation with carbon monoxide and *l*-menthol or ethanol, respectively, was revealed. As expected, the reactions proceed regioselectively to give the linear products, *l*-menthyl isovalerate and ethyl isovalerate. The optimum conditions for the processes at which the yields of *l*-menthylisovalerate and ethyl isovalerate reach 67.6% (94.3% on a reacted *l*-menthol basis) and 79.0%, respectively, were found.

## REFERENCES

1. L. M. Shulov and L. A. Kheifets, *Perfumes and Intermediate Products of Perfumes and Cosmetics Manufacture* (Agropromizdat, Moscow, 1990) [in Russian].
2. M. D. Mashkovskii, *Medicines* (Meditina, Moscow, 1987), Vol. 1 [in Russian].
3. D. S. Yaskina, V. I. Trubnikov, L. A. Kheifets, et al., Khim.-Farm. Zh., No. 4, 51 (1974).
4. *Industrial Regulation for Production of Ethyl  $\alpha$ -Bromoisovalerate*. Pr. 64-0115-21-88 TsKhLS VNIKhFI.
5. A. R. El'man, V. M. Matveev, E. V. Slivinskii, and S. M. Loktev, Khim.-Farm. Zh., No. 3, 47 (1990).
6. Kh. A. Suerbaev, I. A. Tsukanov, A. R. El'man, and K. A. Zhubanov, Zh. Obshch. Khim. **64**, 1189 (1994).
7. Kh. A. Suerbaev, A. R. El'man, I. A. Tsukanov, et al., RU Patent No. 2 036 897, Byull. Izobret., No. 16 (1995).
8. A. R. El'man, Kh. A. Suerbaev, I. A. Tsukanov, et al., RU Patent No. 2 059 605, Byull. Izobret., No. 13 (1995).
9. A. R. El'man, V. G. Skripka, N. N. Antonova, et al., RU Patent No. 2 053 997, Byull. Izobret., No. 1 (1996).
10. Kh. A. Suerbaev, K. M. Shalmagambetov, and K. A. Zhubanov, Zh. Obshch. Khim. **70**, 2046 (2000).
11. Kh. A. Suerbaev, K. M. Shalmagambetov, and K. A. Zhubanov, KZ Patent No. 757, Ofits. Byull., No. 2 (1996).
12. Kh. A. Suerbaev, G. M. Abyzbekova, K. M. Shalmagambetov, and K. A. Zhubanov, Zh. Obshch. Khim. **70**, 553 (2000).
13. U. M. Dzhemilev, N. R. Popad'ko, and E. V. Kozlova, *Metal Complex Catalysis in Organic Synthesis: Alicyclic Compounds* (Khimiya, Moscow, 1999) [in Russian].

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