

Inter-Laboratory collation testing as a method of improvement of objectivity of technical expertise

© Alexey P. Belyaev^{1,2}

¹ Department of Physical and Colloidal Chemistry. St. Petersburg State Chemical-Pharmaceutical University. Professor Popov St., 14. Petersburg, 197376. Russia.

² Department "Forensic examination of substances, materials and products" Peter the Great St. Petersburg Polytechnic University. Polytechnicheskaya St., 29. Petersburg, 195251. Russia.
Phone: +7 (812) 499-39-00, 41-41. E-mail: Alexei.Belyaev@pharminnotech.com

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Abstract

The results of the interlaboratory comparison tests of experimental laboratories that analyzed vodka produced and sold in the Russian Federation for human consumption are presented in order to demonstrate the capabilities of the comparison tests. The choice of vodka as a model object was determined, on the one hand, by its definite proximity to medicinal substances, and on the other, by its assignment as food product, for which the regulatory framework for interlaboratory comparison tests was developed in sufficient detail. The following controlled indicators were examined: strength, alkalinity, mass concentration of acetaldehyde, mass concentration of acetic aldehyde, mass concentration of fusel oil, mass concentration of esters (methyl acetate, ethyl acetate), volume fraction of methyl alcohol in terms of anhydrous alcohol. 30 experimental laboratories are involved in the interlaboratory comparison tests. All participants guided by the same regulatory documents. The test results are processed statically in accordance with the regulatory framework developed for food products. It demonstrated that the majority of participants in the interlaboratory comparison tests successfully coped with the task of testing vodka under the conditions of reproducibility of the analytical method, and recommendations were made to correct the activities of testing laboratories for the rest. The diagrams were constructed to demonstrate visually checks on the quality of tests in determining strength, in determining alkalinity, in determining the mass concentration of acetic aldehyde, in determining the mass concentration of fusel oil and in determining the volume fraction of methyl alcohol in terms of anhydrous alcohol.

The results of statistical processing allowed to state that interlaboratory comparison tests correctly and visually assess the competence of the activities of experimental laboratories, allow to plan actions preventive violations in the objectivity of the work of experimental laboratories. It is shown that the introduction of the practice of experimental laboratories working in the field of production and circulation of medicinal substances, interlaboratory comparison tests can be one of the possible ways to improve the quality of medicinal substances. The opinion was expressed that for testing interlaboratory comparison tests in the production and circulation of medicinal substances one can use the regulatory framework developed for food products.

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