



Russian Academy of Sciences
Russian Foundation for Basic Research
Southern Federal University
G.A. Krestov Institute of Solution Chemistry
of the Russian Academy of Sciences
N.S. Kurnakov Institute of General and Inorganic Chemistry
of the Russian Academy of Sciences
Federal Research Center "Crystallography and Photonics"
of the Russian Academy of Sciences
M.V. Lomonosov Moscow State University
ZAO "Schag"
The Editorial Board
"Supercritical Fluids: Theory and Practice"

The 10th Scientific and Engineering Conference
with International Participation
"Supercritical Fluids: Fundamentals, Technologies, Innovations"

BOOK of ABSTRACTS

30 September 2019 - 06 October 2019

Rostov-on-Don

Don-2019

**INVESTIGATION OF THE MOLECULAR STRUCTURE OF ARBIDOL IN
SUPERCRITICAL CARBON DIOXIDE BY NMR SPECTROSCOPY**

Khodov I.A.^{1,2}, Belov K.B.¹, Dyshin A.A.¹, Khafizova A.A.², Yulmetov A.R.²,

Kiselev M.G.¹

¹*G.A. Krestov Institute of Solution Chemistry of Russian Academy of Sciences,
Ivanovo, Russian Federation*

²*Institute of Physics, Kazan Federal University, Kazan, Russian Federation*

iakh@isc-ras.ru

Arbidol (also known as umifenovir) is a synthetic antiviral drug developed over 30 years ago to combat the seasonal influenza virus [1]. Since that time, arbidol was shown to inhibit viruses from more than a dozen families [2]. Therefore, the study of the structure of Arbidol is a necessary step for developing a strategy for improving this compound, both in terms of biological activity and from the point of view of physicochemical characteristics. This problem is particularly relevant in the light of studies of the effect of supercritical solvents on the polymorphism of nanocrystalline forms of biologically active compounds in a polymer matrix. In this paper the features of the structure and spectral characteristics of Arbidol in scCO₂ and chloroform obtained using modern NMR methods are discussed.

The experimental data were obtained using the molecular fluid spectroscopy facility of G.A. Krestov Institute of Solution Chemistry, RAS (unique scientific equipment no. 503933). The reported study was funded by the Russian Foundation for Basic Research according to the project no. 18-29-06008. Also partial funding was provided by a grant from the President of the Russian Federation for state support of young Russian scientists – candidates of sciences: MK-1409.2019.3.

- [1] Blaising J., Polyak, S.J., Pecheur, E.-I., Arbidol as a broad-spectrum antiviral: An update, *Antiviral Research*, 2014, 107, 1, 84-94.
- [2] Fink, S.L., Vojtech, L., Wagoner, J., Slivinski, N.S.J., Jackson, K.J., Wang, R., Khadka, S., Luthra, P., Basler, C.F., Polyak, S.J., The Antiviral Drug Arbidol Inhibits Zika Virus, *Scientific Reports*, 8, 1, 2018, 8989