

**THE USING OF POLYSACCHARIDES FOR THE DEVELOPMENT OF
PARASITOCIDES AND ANTITUMOR DRUGS**

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Polysaccharides, being natural polymeric substances, play an important role in the modification of medicinal substances with low or poor solubility in water. Thus, the mechanochemical activation of such substances with the help of polysaccharides makes it possible to increase their solubility and bioavailability. The solid dispersions (SD) obtained by this technology can be considered as promising medicines with a wide range of action, from parasitocides to anti-cancer agents.

Most anthelmintic substances are poorly soluble in water, which implies a deliberate increase in their dosage, which means an increase in the cost of the future drug and its toxicity to a living organism. We have shown the possibility of increasing the solubility, bioavailability, and parasitocidal efficacy of anthelmintic substances such as albendazole, fenbendazole, triclabendazole and niclosamide [1-3].

Taking into account the data found in the literature on the manifestation of anticancer activity of some anthelmintic substances, we studied the anticancer properties of a number of promising compositions obtained by mechanochemical modification of niclosamide and albendazole substances. The obtained niclosamide SDs exhibit a high level of cytotoxic activity against human lung and colon cancer cells, which is comparable to that of camptothecin. Expectations were expressed in obtaining promising drugs for use as cytotoxic drugs [4, 5].

References:

1. Khalikov SS, Lokshin BV, Ilyin MM et al. *Methods for obtaining solid dispersions of drugs and their properties*. Rus Chem Bull, 2019, 68 (10): 1924-1932.
2. Khalikov SS. *Mechanochemical technology for regulation of the solubility of anthelmintic drugs by using Polymers*. INEOS OPEN, 2021, 4 (2): 53–60.
3. Varlamova AI, Khalikov SS, Arkhipov IA et al. *Influence of Parametrs of Mechanochemical Processing on the Efficacy of Complex Solid Dispersion of Anthelmintics*. Current Bioactive Compounds, 2023, 21 (3):070624230854.
4. Khalikov SS, Ilyin MM, Lokshin BV et al. *Development of new dosage forms of niclosamide with increased solubility and cyrotoxic activity*. Pharm Chem J, 2022, 55 (11):1229-1233.
5. Khalikov SS, Khakina EA, Antoshkina EP, et al. *Chemical transformations of albendazole during mechanical treatment with carboxylic acids and their cytotoxicity*. Rus J Parasitol, 2026, 20(2):310–325.

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