

THE POSSIBILITY OF THE EXISTENCE OF MESOPHASES FOR SECOND-GENERATION ANTICOAGULANT RODENTICIDES

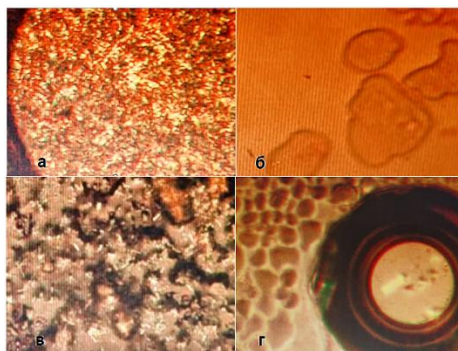
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Second-generation anticoagulant rodenticides have been known since the late 1970s. Since the synthesis and scaling of the production process, melting point ranges reaching several tens of degrees have been established. Recently, we obtained various new modifications of difenacoum and brodifacoum. These modifications were subjected to comprehensive study, and the existence of significant melting point ranges was fully confirmed. We did not immediately recognize this fact, but after obtaining data on the crystalline structure of some modifications, we performed more precise measurements using visual polythermal microscopy, which confirmed the assumption that difenacoum and brodifacoum possess liquid crystalline states.

At the initial stage of melting, areas with textures reminiscent of the schlieren textures of smectics (Fig. 1 a-c) and clearly visible spherical areas similar to droplets of cholesteric (Fig. 1 g) are formed, which glow when the polarizers are crossed in the field of view of the microscope.



Textures obtained at x100 magnification in crossed polarizers a) difenacoum at 232 °C, b) difenacoum at 230 °C, c) difenacoum at 232 °C, d) brodifacoum at 218 °C

Textures for thermotropic liquid crystals are formed and visually recorded in a similar manner. Based on the crystal structures in which "rigid" and conformationally labile aromatic fragments are formed, various types of textures emerge, revealing the orientational order of molecules or molecular clusters during the transition from the crystalline to the isotropic phase.