BIOCIDAL PRODUCTS BASED ON CARBON ADSORBENTS IMPREGNATED BY SILVER NANOPARTICLES

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Abstract – A technologically feasible and effective procedure for preparing biocidal products is developed based on adsorption of silver nitrate on carbon adsorbents of various types and followed by its reduction with sodium borohydride. The products obtained from carbon sorbents impregnated with silver nanoparticles were found to possess antimicrobial properties. A correlation of bacteriostatic activity of the obtained products with the structure of carbon adsorbents is revealed. The priority of expanded fluorine-containing graphite for the synthesis of biocidal additives containing nanosized silver particles is established. The developed method excludes the use of toxic surfactants and can be recommended for obtaining biocidal additives which can be introduced into rubber and polymeric goods applying in touch with food items.

Keywords: nanoparticles, silver, adsorbent, expanded graphite, sodium borohydride, antimicrobial activity, *Azotobacter vinelandii*, *Bacillus licheniformis.*