

New bioactive hydrophilic polyurethane containing folate-lactose

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One of the promising areas of modern science is the development and research of new biologically active polymer film-forming materials and drug delivery systems.

To this aim, new folate-containing polyurethane, based on diisocyanate prepolymer and folate-lactose, (Fig. 1) was obtained [1]. Folic acid was immobilized along azomethine bond. Polyurethane with folate-lactose was investigated by IR-spectroscopy. Folate-lactose was obtained by reaction of amino group of folic acid and carbonyl group of tautomeric form of D-lactose and its structure was confirmed by IR- and ^1H NMR-spectroscopy studies.

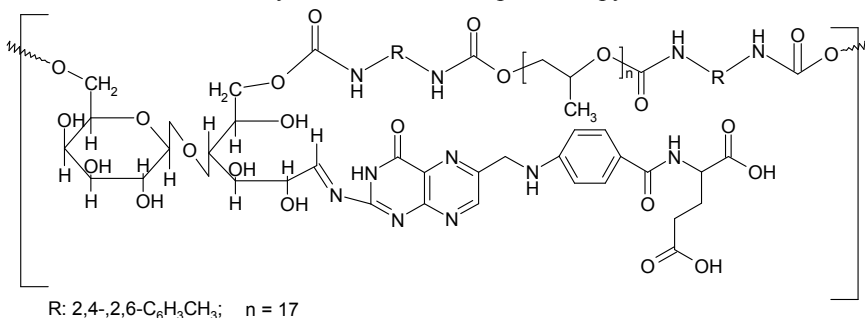


Fig 1. Fragment of formula of polyurethane with folate-lactose

It was found, that polymeric material with folate-lactose has such characteristics: tensile strength – 10 MPa, relative elongation – 64 %, intrinsic viscosity – 0,18 dl/g, moisture absorption – 13 % and they are much higher than appropriate characteristics of polyurethane, modified by D-lactose.

Biological activity and biocompatibility of new polyurethane were investigated by tissue culture method and histological experiment.

1. Pat. Ukraine. The polyurethane with folate-lactose fragments as film-forming hydrophilic bioactive biocompatible material / Kulyk L.V., Rozhnova R.A., Galatenko N.A., Gladyr I.I. – Appl. No. u 2015 02515. Filed 20.03.2015.