

DANUTA SUCHARZEWSKA¹, JULIA KOMINIĄK²,
KRYSTYNA NOWAKOWSKA¹

MODIFIED STARCH-BASED PREPARATIONS WITH ANTISEPTIC ACTION

Positive clinical effects in treatment wounds with iodofors depend to a large extent on physicochemical properties of iodine complexes. They include a high ability to swelling and absorbing liquids. Therefore, studies on improvement of iodofors concern the applicability for iodine complexing of such carriers which under the influence of liquids do not dissolve but swell and, at the same time, release active iodine.

The aim of the study was to obtain a Polish starch-based iodine preparation which could be used in treating surface wounds on skin.

In the investigations potato and corn starch was used. Two types of starch were characterized by different ratios of amylose to amylopectin (1:4, 4:1, respectively). Starch modification consisted of etherification, cross-linking of the etherified starch, and complexing with iodine. During the starch etherification, conditions for production of carboxymethyl starch were determined. This starch was characterized by low viscosity (below 50 Pas), and water retention coefficient (RE) reaching about 5.

The best results were obtained for corn starch with increased amylose content, when the etherification was carried out using monochloroacetic acid in a hydrated medium. In order to obtain the preparation in the form of gel, the carboxymethyl starch was cross-linked. The cross-linking was performed using epichlorohydrin. The best gel quantity and quality were obtained when the cross-linking of corn carboxymethyl starch was performed in a dispersion for 20 hrs at 50°C. Attempts to form an iodine complex of the cross-linked carboxymethyl starch were made using 1.5% solution of iodine at variable time of iodination (1 to 5 hours). It was found that the best iodisorbs were obtained from the corn starch containing over 40% of amylose. ☒

¹ Institute of Chemical Technology of Food, Technical University of Łódź

² Polfa Kutno Farmaceutical Company