Original article

UDC: 615.277.07:616-097
doi:10.5633/amm.2019.0303

PREPARATION AND INTEGRITY EXAMINATION OF FREEZE DRIED KIT OF TRASTUZUMAB-IMMUNOCONJUGATES AND COLD LABELED IMMUNOCONJUGATES BY APPLYING SDS-PAGE ELECTROPHORESIS

Marija Sterjova[1,2], Predrag Džodić[2], Tatjana Ruskovska[1], Paulina Apostolova[1], Milan Risteski[3], Emilija Janevik-Ivanovska[1]

[1]University "Goce Delcev", Faculty of Medical Sciences, Štip, RN Macedonia
[2]University of Niš, Faculty of Medicine, Department of Pharmacy, Niš, Serbia
[3]University Clinic of Radiotherapy and Oncology, Skopje, RN Macedonia

Contact: Marija Sterjova
Sutjeska 43b/5, Štip, RN Macedonia
E-mail: marija.sterjova@ugd.edu.mk

Radioimmunoconjugates are promising agents in diagnostics and treatment of different types of cancers. The aim of this study was the formulation of stable freeze dried kits of trastuzumab with three types of bifunctional chelators for further radiolabeling. The integrity of the antibody in formulated conjugates was examinated with sodium dodecyl sulfate polyacrylamide gel electrophoresis (SDS-PAGE).

Trastuzumab is a humanized monoclonal antibody used in the therapy of aggressive HER2 positive breast cancer. Conjugation of trastuzumab was made with various chelators: p-SCN-Bn-DTPA (1:10; 1:20; 1:50), p-SCN-Bn-DOTA (1:20), and 1B4M-DTPA (1:10; 1:20; 1:50). The purified immunoconjugates were lyophilized by applying two day protocol in order to produce the stable freeze dried kits. Cold labeling with nonradioactive isotopes $LuCl_3$ and YCl_3 was performed to examine the possible modifications of secondary structure after radioactive labeling. SDS-PAGE electrophoresis was used to estimate the purity and integrity of the antibody before and after conjugations, lyophilization and labeling under reducing conditions.

The obtained results show that there is no degradation of the examined antibody. The trastuzumab-conjugates and cold labeled formulations migrated in two bands (~50 kDa and ~25 kDa), in the same way as IgG1 antibodies and unmodified trastuzumab.

Acta Medica Medianae 2019;58(3):15-23.

Key words: *Bifunctional chelators, conjugations, electrophoresis, trastuzumab*