# In-vitro cytotoxic activities of poly(2-ethyl-2-oxazoline)-based amphiphilic block copolymers prepared by CuAAC click chemistry

***Umut Uqur Ozkose*[1,2,3]**, *Sevgi Gulyuz[2,3], Polen Kocak[5], Dilek Telci[5], Onur Alpturk[2], Mehmet Atilla Tasdelen[4], Ozgur Yilmaz[3]*

[1]*Department of Chemistry, Faculty of Science and Letters, Piri Reis University, Tuzla, TR-34940, Istanbul, Turkey*

[2]*Department of Chemistry, Faculty of Science and Letters, Istanbul Technical University, Maslak, TR-34469, Istanbul, Turkey*

[3]*Materials Institute, Marmara Research Center, TUBITAK, Gebze, TR-41470, Kocaeli, Turkey*

[4]*Department of Polymer Engineering, Faculty of Engineering, Yalova University, TR-77100, Yalova,Turkey*

[5]*Department of Genetics and Bioengineering, Faculty of Engineering and Architecture, Yeditepe University, Atasehir, TR-34755, Istanbul, Turkey*

***uozkose@pirireis.edu.tr***

Synthesis and characterization of well-defined amphiphilic block copolymers containing poly(2-ethyl-2-oxazoline) as hydrophilic block and poly(ε-caprolactone) or poly(L-lactide) as hydrophobic block is achieved by copper-catalyzed azide-alkyne cycloaddition (CuAAC) click chemistry. The clickable precursors, α-alkyne-functionalized poly(ε-caprolactone) and poly(L-lactide) and ω-azido-functionalized poly(2-ethyl-2-oxazoline) are simply prepared and joined using copper sulfate/ascorbic acid catalyst system at room temperature. The structures of precursors and amphiphilic block copolymers are characterized by spectroscopic, chromatographic and thermal analyses. The cytotoxic activities of resulting amphiphilic block copolymers and their precursors are investigated in the prostate epithelial and cancer cells under in-vitro conditions. The treatment of the healthy prostate epithelial cell line PNT1A reveals that no significant cytotoxicity, whereas some significant toxic effects on the prostate cancer cell lines are observed.

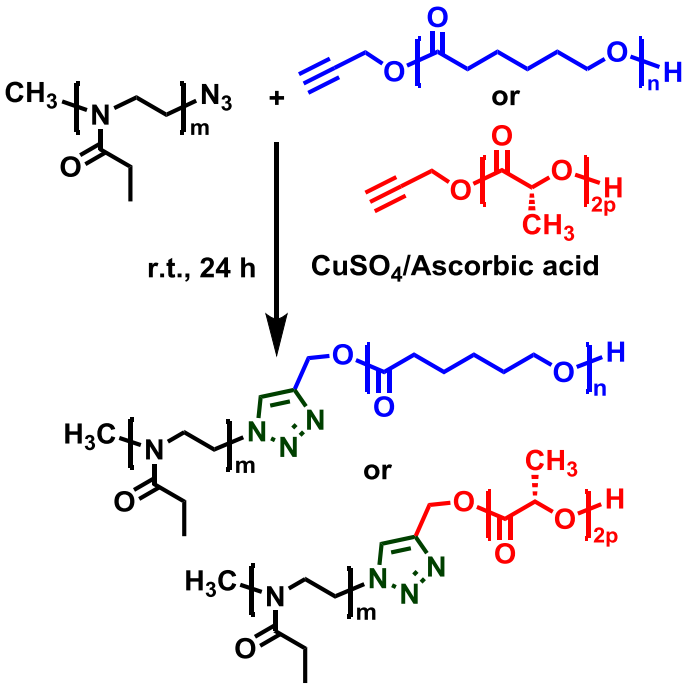


***Figure 1.*** *Synthesis of amphiphilic block copolymers (PEtOx-b-PCL and PEtOx-b-PLA) via CuAAC click reactions.*

**References**

1. S. Gulyuz, **U. U. Ozkose**, P. Kocak, D. Telci, O. Yilmaz, M. A. Tasdelen, eXPRESS Polymer Letters, **2018,** Vol. 12, No. 2, 146-158.

2. M. Bauer, C. Lautenschlaeger, K. Kempe, L. Tauhardt, U. S. Schubert, D. Fischer, Macromolecular Bioscience, **2012**, 12, 986-998.