

**Report of the postdoc research work done during the period
 (From 06-05-2022 to 31.07.2022)**

I have started my postdoc research in Chemistry entitled "A novel class of anticancer Biginelli-based agent bearing ϵ -Polycaprolactone: Cancer cellular imaging and cytotoxicity evaluation for phase pharmacological Studies" under the guidance of Dr. Nenad Jankovic, Senior research associate, Institute for Information Technologies, University of Kragujevac, Serbia. From 06-05-2022 to 31.07.2022, I had been doing the literature survey in the titled of a novel class of anticancer Biginelli-based agent bearing ϵ -Polycaprolactone: Cancer cellular imaging and cytotoxicity evaluation for phase pharmacological Studies research work was done in the period.

The literature survey was carried out in University of Kragujevac for the first one month to understand the basic principles and theoretical background of the organic compounds conjugated with polymers, synthetic organic chemistry and drug carrier for phase pharmacological Studies. Extensive literature survey has been carried out in this area organic-polymeric carrier to clarify the fundamental related to the strategies to non-toxic and biocompatibility. From the vast literature survey, the development of organic-polymeric carrier was chosen for the research work. For the proposed current research work all the chemicals, glassware and solvents were available in the laboratory. The basic and interpretation of characterization techniques has been studied like Fourier transform infrared spectroscopy (FT-IR), Nuclear magnetic resonance spectroscopy (NMR) X-ray Diffraction (XRD), Atomic force microscopy (AFM), scanning electron microscope (SEM), Transmission electron microscopy (TEM) and Dynamic light scattering (DLS) techniques. During this period I wrote a review article that is already under consideration in SCI Journal.

In this next two months, a convenient synthesis of ethyl 4-(4-butoxy-3-methoxyphenyl)-6-(chloromethyl)-2-oxo-1,2,3,4-tetrahydropyrimidine-5-carboxylate was carried out in presence of 4-butoxy-3-methoxybenzaldehyde, thiourea, ethyl 4-chloro-3-oxobutanoate and in ethanol using easily available catalyst sulfamic acid (Figure 1).

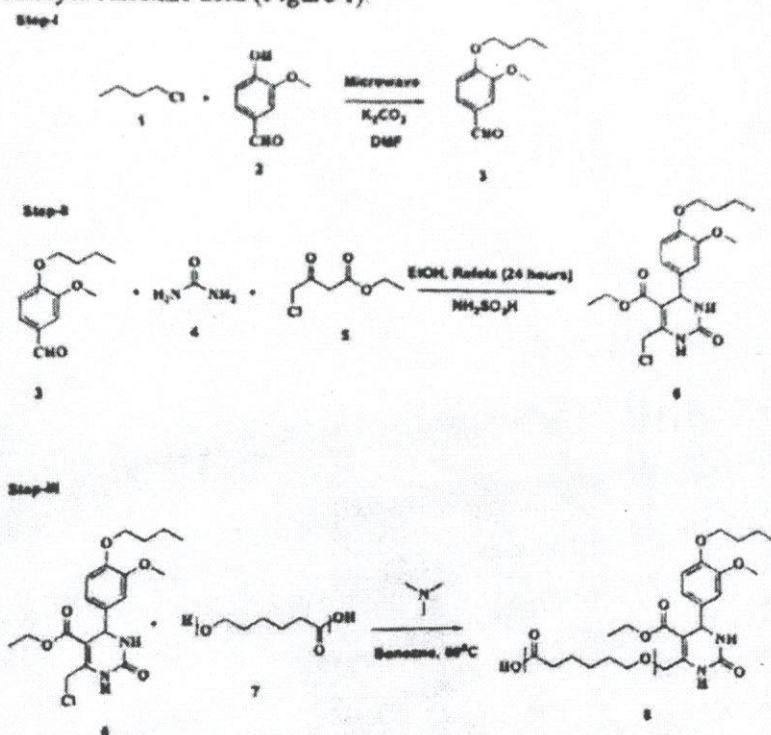


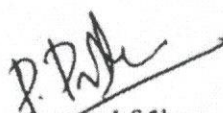
Figure 1: Schematic representation of the Biginelli hybrids conjugates with ϵ -polycaprolactone nanocarrier formation.

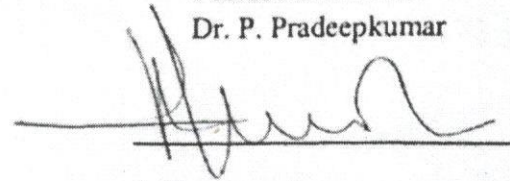
One-pot Biginelli reaction is very important due to the use of simple and readily available chemicals, less reaction time, economically friendly and furnishing good yield. Structures of the synthesized compounds are characterized by spectral techniques like $^1\text{H-NMR}$, and $^{13}\text{C-NMR}$. Biginelli agent will conjugate with ϵ -polycaprolactone nanocarrier will be characterized by several spectroscopy and microscopic techniques in details. The cancer cellular imaging and cytotoxicity will be evaluation for phase pharmacological studies. In near future we will write and submit results that were came out from my postdoctoral project.

Acknowledgments

This research was done at Institute for Information Technologies, University of Kragujevac, and was financially supported by the University of Kragujevac (Decision no: III-01-1078/46 from 23rd December 2021). I want to thank my postdoc supervisor Dr. Nenad Jankovic, whose name appear in the reference below, for their essential contributions to the work described herein.

In Kragujevac and Madurai
05.08.2022.


Postdoctoral fellow
Dr. P. Pradeepkumar


Supervisor
Dr. Nenad Janković