

STEPS Students Report

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I spent this August in the Country of Rising Sun and it was my first trip so far away from home. Looking back I can also say that it was also the most interesting trip I have ever had. I was working in the laboratory of Bioorganic Chemistry headed by professor Suga. I was really surprised to find out that my supervisor there was also a Russian guy from Chemistry department of Moscow State University. I knew our world is tiny but had no idea how much!

My work dealt with the organic synthesis of different peptides. The aim of the first part was to observe the effect of histidine presence in the sequence on deprotonation of lysine. We used Fmoc-strategy for this purpose, which means that the synthesis starts from C-terminus of peptide on the small polymeric resin beads functionalized with reactive amino group. At the same time, the amino group of amino acid is protected using special residue (namely, fmoc). Obtained samples were purified by HPLC (high pressure liquid chromatography) and then analyzed using MALDI and LCMS. The last method combines chromatography with mass-spectrum, which makes possible to divide isomers. First synthesis attempt showed us the presence of two isomers in each case: it was caused by the racemization of histidine. The next trial was more successful thus six purified peptides were obtained.

The second part of my work was to find the appropriate conditions for obtaining peptides with one of amino acids changed to alpha-hydroxy acid (namely, lactic acid). Four different types of reagents were tested. Reactions were set for 3 hours and for the whole night. The highest yield was observed in the whole-night-reaction with DCC.

Everyone in the laboratory was very friendly and always there to help me: to show where to find the reagent I need, how to work with the new device. For example, we usually just prepare the sample and give it to the special person who then sends us the spectrum in Moscow, and here I obtained MALDI spectrum by myself! I am very grateful to the members of Suga lab for their help.

I also travelled a lot during my weekends in Japan. We visited beautiful Kamakura at my first weekend. We saw The Great Buddha statue and Kotokuin Temple.



Tokyo itself made a great impression on me. I will never forget its crowded streets, friendly people and lots of colorful signboards. We went to Onsen (Japanese bath) on my last weekend and really enjoyed being involved into traditional Japanese relaxation.



It was undoubtedly the most interesting and useful for my future career internship, I am very grateful to everyone who made this possible and of course to professor Suga who gave me a chance to participate and visit his laboratory. I hope that STEPS program will continue its work and will accept more and more students in future.