



# UNIVERZITA KARLOVA

## Farmaceutická fakulta v Hradci Králové

10th April, 2022

### Supervisor report

MSc Abdullah Al Mamun joined my research group ADINACO as a Ph.D. student in academic year 2017/2018. He has been involved in the project "Secondary metabolites from Amaryllidaceae plants as potential drugs for the neurodegenerative and oncological diseases". Abdullah's work involved mostly phytochemical techniques such as column chromatography, analytical and preparative thin layer chromatography, he collected also basic knowledges in flash and HPLC chromatography. Analytical methods for compound characterization included GC-MS, NMR spectroscopy, optical rotatory. During his study he successfully passed the following exams: Chemistry of Natural Products, English Language, Phytochemical isolation methods, Pathobiochemistry, Selected instrumental-analytical methods, and State doctoral exam from the field Pharmacognosy and nutraceuticals.

He has been participating at four conferences held by Faculty of Pharmacy in Hradec Králové in years 2019, 2020, 2021, and 2022 with different presentations.

Abdullah Al Mamun went his work with care and intelligence, and after few months he became a competent member of my research team. He learned new methods and techniques and was productive during his study. As a continuation of his research work, he also participated in the synthesis of compounds structurally inspired by isolated minor natural products as well as in preparation of semisynthetic derivatives of isolated alkaloids.

The quality of his work is evidenced by the publishing activity: during his study he published as a lead author or co-author 7 original manuscripts (2x as first-author, all with the IF). Published and submitted articles are following:

- 1) AL SHAMMARI, L., AL MAMUN, A., KOUTOVÁ, D., MAJOROŠOVÁ, M., HULCOVÁ, D., ŠAFRATOVÁ, M., BREITEROVÁ, K. MAŘÍKOVÁ, J., HAVELEK, R., CAHLÍKOVÁ, L.: Alkaloid profiling of *Hippeastrum* cultivars by GC-MS, isolation of Amaryllidaceae alkaloids and evaluation of their cytotoxicity. *Rec. Nat. Prod.* **14**, 154-159 (2020).  
<http://doi.org/10.25135/rnp.147.19.06.1302>
- 2) MAŘÍKOVÁ, J., RITOMSKÁ, A., KORÁBEČNÝ, J., PEŘINOVÁ, R., AL MAMUN, A., KUČERA, T., KOHELOVÁ, E., HULCOVÁ, D., KOBŘILOVÁ, T., KUNEŠ, J., NOVÁKOVÁ, L., CAHLÍKOVÁ, L.: Aromatic esters of the crinine Amaryllidaceae alkaloid ambelline as selective inhibitors of butyrylcholinesterase. *J. Nat. Prod.* **83**, 1359-1367 (2020).  
<https://doi.org/10.1021/acs.jnatprod.9b00561>

- 3) PEŘINOVÁ, R., MAAFI, M., KORÁBEČNÝ, J., KOHELOVÁ, E., DE SIMONE, A., AL MAMUN, A., HULCOVÁ, D., MARKOVÁ, J., KUČERA, T., JUN, D., ŠAFRATOVÁ, M., MAŘÍKOVÁ, J., ANDRISANO, V., JENČO, J., KUNEŠ, J., MARTINEZ, A., NOVÁKOVÁ, L., CAHLÍKOVÁ, L.: Functionalized aromatic esters of the Amaryllidaceae alkaloid haemanthamine and their *in vitro* and *in silico* biological activity connected to Alzheimer's disease. *Bioorg. Chem.* **100**, 103928 (2020).  
<https://doi.org/10.1016/j.bioorg.2020.103928>
- 4) AL MAMUN, A., MAŘÍKOVÁ, J., HULCOVÁ, D., JANOUŠEK, J., ŠAFRATOVÁ, M., NOVÁKOVÁ, L., KUČERA, T., HRABINOVÁ, M., KUNEŠ, J., KORÁBEČNÝ, J., CAHLÍKOVÁ, L.: Amaryllidaceae alkaloids of belladine-type from *Narcissus pseudonarcissus* cv. Carlton as new selective inhibitors of butyrylcholinesterase. *Biomolecules* **10**, 800 (2020).  
<https://doi.org/10.3390/biom10050800>
- 5) MAŘÍKOVÁ, J., AL MAMUN, A., AL SHAMMARI, L., KORABEČNÝ, J., KUČERA, T., HULCOVÁ, D., KUNEŠ, J., MALANÍK, M., VAŠKOVÁ, M., KOHELOVÁ, E., NOVÁKOVÁ, L., CAHLÍKOVÁ, L., POUR, M.: Structure Elucidation and cholinesterase inhibition activity of two new minor Amaryllidaceae alkaloids; *Molecules* **26**, 1279, (2021).  
<https://doi.org/10.3390/molecules26051279>
- 6) MAAFI, N., AL MAMUN, A., JANĎOUREK, O., MAŘÍKOVÁ, J., BREITEROVÁ, K., DIEPOLTOVÁ, A., KONEČNÁ, K., HOŠŤÁLKOVÁ, A., HULCOVÁ, D., KUNEŠ, J., KOHELOVÁ, E., KOUTOVÁ, D., ŠAFRATOVÁ, M., NOVÁKOVÁ, L., CAHLÍKOVÁ, L.: Semisynthetic derivatives of selected Amaryllidaceae alkaloids as a new class of antimycobacterial agents. *Molecules* **26**, 6023 (2021).  
<https://doi.org/10.3390/molecules26196023>
- 7) AL MAMUN, A., PIDANY, F., HULCOVA, D., MARIKOVA, J., KUCERA, T., SCHMIDT, M., CATAPANO, M.C., HRABINOVA, M., JUN, D., MUCKOVA, L., KUNES, J., JANOUSEK, J., ANDRYS R., NOVAKOVA, L., PERINOVA, R., MAAFI, N., SOUKUP, O., KORABECNY, J., CAHLIKOVA, L.: Amaryllidaceae alkaloids of norbelladine-type as inspiration for development of highly selective butyrylcholinesterase inhibitors: Synthesis, biological activity evaluation, and docking studies. *In. J. Mol. Sci.* **22**, 8308 (2021).  
<https://doi.org/10.3390/ijms22158308>

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