ABSTRACT OF PHD DISSERTATION
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Saponins are natural glycoside compounds occurring mainly in the plant world. They are composed of a hydrophilic carbohydrate component, attached to hydrophobic aglycone in C-3 position. These amphipathic compounds are natural surfactants, often used in everyday life. They also show interesting pharmacological properties, such as anti-diabetic, anti-cancer and anti-inflammatory effects. Moreover, they act as adjuvants in cellular immune response, and participate in inter- and intracellular communication processes. These valuable properties make saponins useful in the process of designing new drugs.

An example of compounds which are of interest due to their biological properties are steroidal saponins, in particular diosgenyl glycosides, composed of diosgenin and D-glucosamine (diosgenyl 2-amino-2-deoxy-β-D-glucopyranoside). These compounds were obtained by chemical synthesis and are characterised by a number of proven biological properties: antibacterial, antifungal and antineoplastic.

The subject of my PhD dissertation is the synthesis of a group of new *N*-acyl diosgenyl 2-amino-2-deoxy-β-D-glucopyranoside derivatives. I have modified the amino function in the carbohydrate part of diosgenyl glucosaminoside by attaching selected hydroxy acids, amino acids and one dipeptide. The synthesis' objective was the obtention of compounds showing potential antimicrobial activity, characterised by high specificity and low haemolytic abilities against human erythrocytes in comparison with the original compound – diosgenyl 2-amino-2-deoxy-β-D-glucopyranoside hydrochloride. I have confirmed the structure of all the obtained compounds based on NMR (^{1}H, ^{13}C, COSY, HSQC) and MS (HRMS and MALDI TOF-MS) spectra.

In order to determine their biological activity, the obtained compounds were tested against Gram-positive and Gram-negative bacteria reference strains, as well as *Candida* fungi. Their haemolytic abilities were also determined. The research confirmed that the modification of the amino function in the carbohydrate part of glycoside resulted in an increase in the microbiological activity of some of the obtained compounds which do not show haemolytic properties in terms of therapeutic activity.