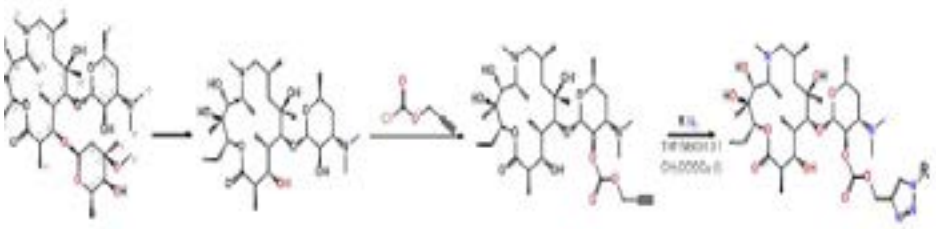
Anna Janas et al., Med chem (Los Angeles) 2018, Volume 8
DOI: 10.4172/2161-0444-C1-039

Synthesis and structure-activity relationship of a new derivatives of 14- and 15-membered macrolide antibiotics containing rebuilt saccharide arms

Anna Janas, Krystian Pyta and **Piotr Przybylski**
Adam Mickiewicz University in Poznań, Poland

Macrolide antibiotics are large group of natural products produced by various Streptomyces strains. They are used against various infectious diseases. Macrolides can be classified by a lot of different criteria. One of them is type and size of the macrolide ring and type of saccharide moieties joined to the aglycone ring as e.g. mycaminose, mycarose, cladinose, forosamine, desosamine. These classifications includes mainly lactone macrolides antibiotics, such as 14-membered erythromycins, 15-membered azithromycins and 16-membered leucomycins. The macrolide lactone antibiotics mechanism of action is based on the inhibition of bacterial protein biosynthesis at different stages by reversible binding to the bacterial 50s subunit at the ribosome. In our laboratory we work on new modifications of lactone macrolide antibiotics, of an improved binding profile to biological target and of increased antibacterial potency. Our modifications are performed using cascade and click approaches to enable better matching between antibiotic and target enzyme/protein. Previously, some changes at aglycone ring via complete reconstruction of saccharides parts using regio- and diastereoselective cascade combination of intramolecular esterifications followed by tandem E1cB eliminations and subsequent 1,2-addition to carbonyl followed by 1,6-conjugate addition α, β, γ, δ –unsaturated aglycone led to entirely new series of macrolide antibiotics of antibacterial and anticancer potential. Currently, with the support of Polish National Science Centre (decision number UMO-2015/19/B/ST5/00231), we applying this approach to modification of another group of natural macrolide antibiotics - 15-membered azalides, by rebuilt saccharide arms using Huisgen reactions, to obtain efficient alternatives to the currently used antibiotics (azithromycin) in clinical therapy.



Biography

Anna Janas was born in Gniezno, Poland, in 1992. She obtained her B.Sc. from Adam Mickiewicz University in Poznan in 2014 and received her M. Sc. degree at the same institution in 2016. She is currently carrying out her PhD studies in chemistry under the supervision of Prof. Piotr Przybylski at Department of Chemistry, Adam Mickiewicz University. To this date she is a co-author of 2 publications. Her research interests include the synthesis of new derivatives of 14- and 15-membered antibiotics with rebuilt sugar arms, determination of their structures in solution and physicochemical parameters.

annadominika.janas@gmail.com