Tapping into the Mysterious World of MIAs
Synthesis and Bioactivities of Different Strictosidine Analogues

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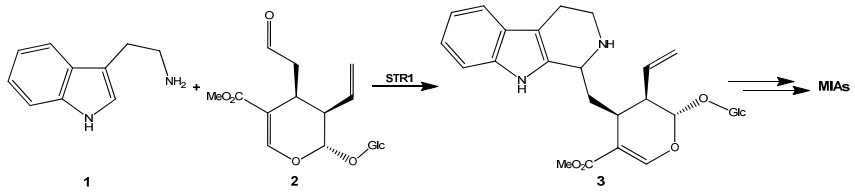
Applications of the over 3000 identified monoterpene indole alkaloids (MIAs) range from therapeutics (e.g. cancer or malaria treatment) to the utilization as pesticides. Strictosidine (**3**) plays a central role during MIA biosynthesis (see Scheme 1) and has shown interesting bioactivities itself.[1, 2] Therefore, the topic of this project is the synthesis of strictosidine analogues and the exploration of their bioactivities.



Scheme 1: Biosynthesis of strictosidine (**3**) from tryptamine (**1**) and secologanin (**2**) via an enzymatic PSR.

In addition to our previous project [3] we broadened our product library by generating compounds of closer similarity to **3**. Therefore, analogues of the precursor secologanin (**2**) were synthesised and then implemented in a non-enzymatic Pictet-Spengler reaction (PSR) with tryptamine (**1**). They bear functionalized cyclic residues with attached e.g. aliphatic or aromatic groups.[4, 5] Several biological tests have been performed with these synthesized analogues to explore how different moieties influence certain bioactivities, also in comparison to natural products.

[1] F. Scossa, M. Benina, S. Alseekh, Y. Zhang and A. R. Fernie, *Planta Med,* **2018**, *84*, 855-873.

[2] G. Guirimand, V. Courdavault, A. Lanoue, S. Mahroug, A. Guihur, N. Blanc, N. Giglioli-Guivarc'h, B. St-Pierre and V. Burlat, *BMC Plant Biol.,* **2010**, *10*, 1-20.

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[4] P. G. McGarraugh, J. H. Jones and S. E. Brenner-Moyer, *J. Org. Chem.,* **2011**, *76*, 6309-6319.

[5] P. Bernhardt and S. E. O'Connor, *Tetrahedron Letters,* **2009**, *50*, 7118-7120.