STUDIES TOWARDS THE TOTAL SYNTHESIS OF ASADANIN

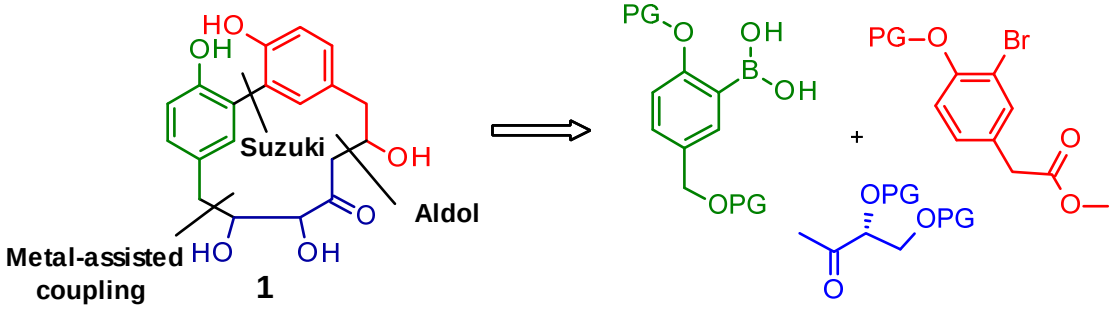
Jekaterina Ongouta[a], Michael Backes[a], Anastasia Albrecht[b], Katharina Hempel[c], Gerhard Krammer[a], Peter Winterhalter[b] and Andreas Kirschning[c]

[a]Symrise AG, Holzminden, Germany
[b]Leibniz University Hannover, Institute of Organic Chemistry, Hannover, Germany
[c]Technical University of Braunschweig,
Institute of Food Chemistry, Braunschweig, Germany

Hazelnuts are important raw materials for bakery and confectionary industry, due to their highly appreciated nutty, roasted, cocoa and buttery taste profile. However, in recent years an intensive, long lasting bitter off-taste of hazelnuts was reported. This off-taste is still detectable after roasting and noticeable in the final products, leading to consumer complaints and economic losses for the hazelnut industry. Activity-guided fractionation and taste dilution analysis of hazelnut kernel (*Corylus avellana L.*) extracts led to the identification of diarylheptanoid natural products, as putative inducers of this bitter off-taste [1]. Amongst others, asadanin (**1**) was identified as one of the candidates for this taste defect.

The structure of asadanin (**1**), also published as Giffonin O [2], could be elucidated using NMR-spectroscopy; however the determination of the absolute stereochemistry has not been published until now. In order to determine the stereochemistry and get deeper knowledge about sensory properties of these diarylheptanoids, the synthetic access to such compounds is highly relevant, as larger amounts of reference samples would be needed to explore effective masking solutions for these taste defects.

Within this study we investigate the synthetic strategy towards asadanin (**1**) and its derivatives. The key steps of the synthesis include ALDOL-reaction and metal-assisted coupling to construct the heptanoid-chain and the SUZUKI-coupling to connect the aromatic rings.



[1] T. Hofmann et al., *J. Agric. Food Chem.*, **2017**, *65*, 1677–1683; T. Hofmann et al., *J. Agric. Food Chem.*, **2018**, *66*, 4660–4673

[2] S. Piacente et al., *J. Nat. Prod.* **2015**, *78*, 2975−2982;