Enantioselective total synthesis of furoindane stilbenolignans based on oxidative SET cascade

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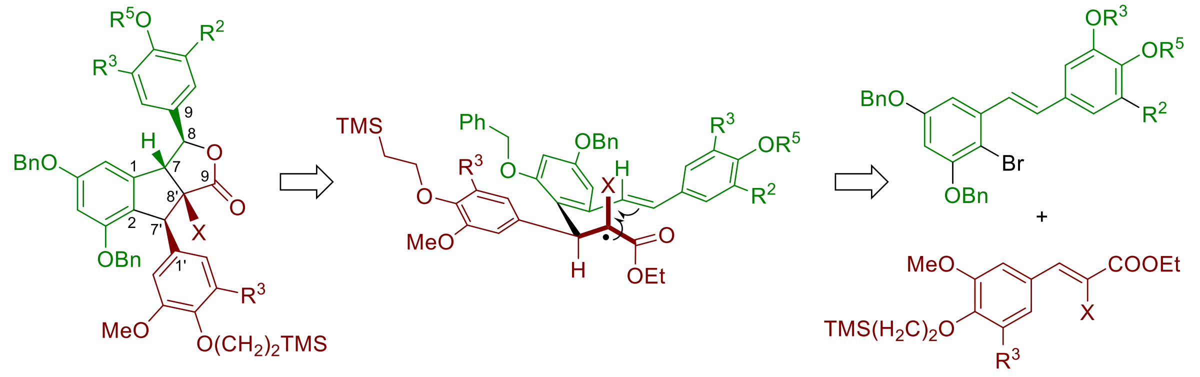
Trivalent carbon-centred reactive intermediates, *i.e.* carbanions, C-centered radicals and carbenium ions can all be stabilized by the presence of neighbouring aromatic rings, but differ strongly in their reactivity and chemoselectivity. Carbanions, thanks to generally manageable reaction kinetics, are well suited for fragment union and stereoselective C-C bond formation via conjugate addition to electron poor π-systems. In contrast to that, higher reactivity of free radicals allows reaction with unactivated alkenes to form small rings. Finally, electrophilic carbenium ions easily undergo C-heteroatom bond formation leading to small-ring heterocycles. Cascading these three processes using SET oxidants results in a unified synthetic strategy applicable to several polyphenol classes including furoindane stilbenolignans.[1]

Development of the requisite methodology for conjugate addition and oxidation will be discussed with particular focus on stereochemical aspect. Enantioselective total syntheses of gnetifolin F and other members of the family will be presented.



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[1] Begum S. A., Sahai M., Ray A. B. Non-conventional Lignans: Coumarinolignans, Flavonolignans, and Stilbenolignans. In *Prog. Chem. Org. Nat. Prod.*; Kinghorn A., Falk H., Kobayashi J. Eds.; Springer: Wien, New York, 2010; Vol 93, p 1-70.