

Synthetic Studies on C-Glucosidic Ellagitannins

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C-glucosidic ellagitannins are a class of plant polyphenols that exhibit various biological effects including antioxidant, antimicrobial, antiviral and antitumoral activities. These compounds contain a (S)-hexahydroxydiphenoyl (HHDP) unit between the O-2 and O-3 positions of the open-chain glucose core, and a C-arylglucosidic bond between the HHDP unit and the glucose C-1 center. Recently, bioinspired synthetic methods for accessing C-glucosidic ellagitannins have been developed, and several members of this family of ellagitannins were chemically synthesized by our two research groups.²

In this study, we applied those methods to synthesize analogues and found that C-glucosidic ellagitannins inhibited amyloid- β aggregation. Furthermore, two artificial oligomers were designed, and they showed higher antioxidant activity than the corresponding natural monomer.

We are now working on the synthesis of lagerstannin B, which is a gluconic acid analogue of C-glucosidic ellagitannins, bearing a 4,6-O-(S)-HHDP unit and a teraryllic 2,3,5-O-nonahydroxytriphenoyl (NHTP) unit. The synthesis of this non-C-glucosidic ellagitannin will benefit from our recent developments of copper(II)•diamine complex-mediated coupling reactions of gallates, including a novel double coupling process and the construction of NHTP units.³

References

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