

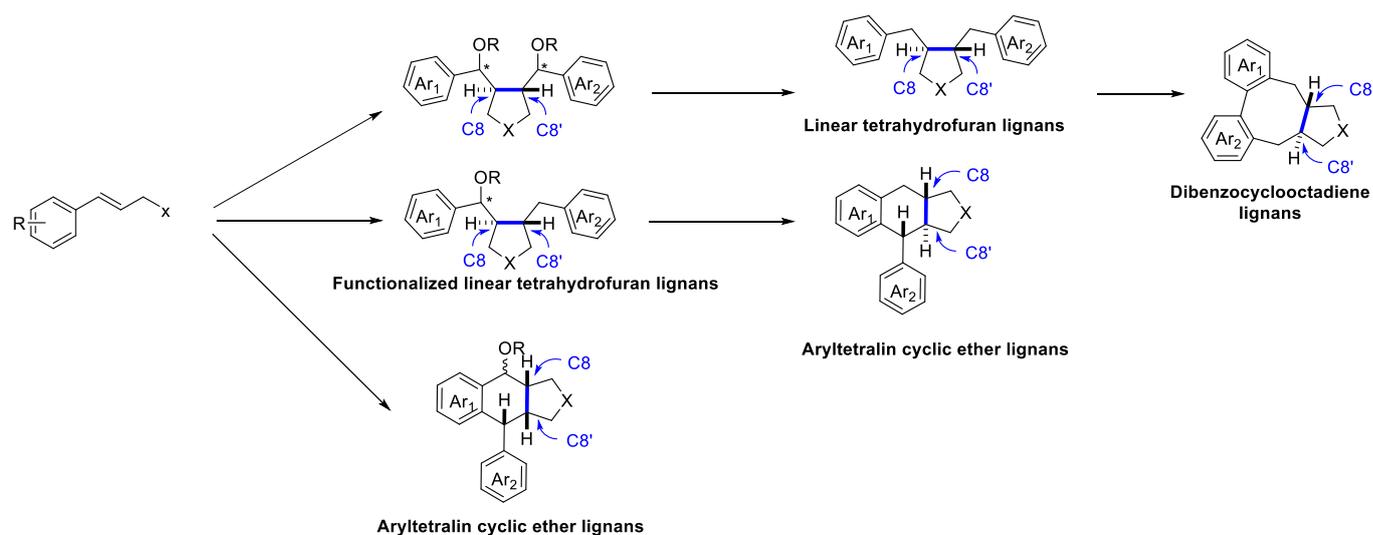
Access to structurally diverse lignans

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Lignans, in spite of their structural diversity, are all biosynthetically derived from coniferyl alcohol. We report a divergent synthesis of lignans from biomass-derived monolignols in a short synthetic sequence. Blue LED irradiation of a dichloromethane solution of dicinnamyl ether derivatives in the presence of a copper(II) source, an alcohol (2.0 equiv) and a catalytic amount of Fukuzumi's salt affords the C7-alkoxylated aryltetralin cyclic ethers. Increasing the amount of alcohol under otherwise identical conditions diverts the reaction course to furnish the C7,C7'-dialkoxylated dibenzyltetrahydrofurans, while replacing the copper oxidant with diphenyl disulfide (PhSSPh) provides selectively the C7-monoalkoxylated dibenzyltetrahydrofurans. Aza-, thia- and carba-analogues of lignans are equally accessible by simply changing the tethering atom of the allylic alcohols. Concise total syntheses of aglacins A, E, F, brassilignan, and dehydrodimethylconidendrin are documented featuring these transformations.



[1] J.-C. Xiang, C. Fung, Q. Wang, J. Zhu. *Nat Commun*, **2022**, *13*, 3481.