Insights into the Biosynthetic Pathway of Multihexose Benzoxazinoids in Maize (*Zea mays)*

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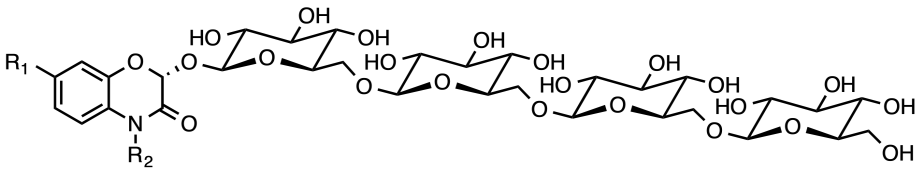
Benzoxazinoids (BXDs) are plant specialized metabolites exerting a pivotal role in plant nutrition, allelopathy, and defenses.[1] Multihexose BXDs were previously observed in cereal-based food products, such as whole-grain bread,[2] but their synthesis in planta remained unclear. Our data show that drought, but not elevated CO2 nor temperature, induced the production of di-, tri-, and even tetrahexose BXDs in maize. The drought-mediated induction of multihexose BXDs was common among several maize lines. Bioinformatic analyses identified two UDP-glycosyltransferase candidates that, when heterologously expressed in E. coli, catalyzed the glucosylation of BXD glucosides, producing multihexose derivatives. We report here on our recent efforts to further characterize the BXD synthetic pathway and its relevance in maize-environment interactions.[3]



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