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Late-stage, C–H oxidation/decarboxylation via non-heme iron catalysis diversion

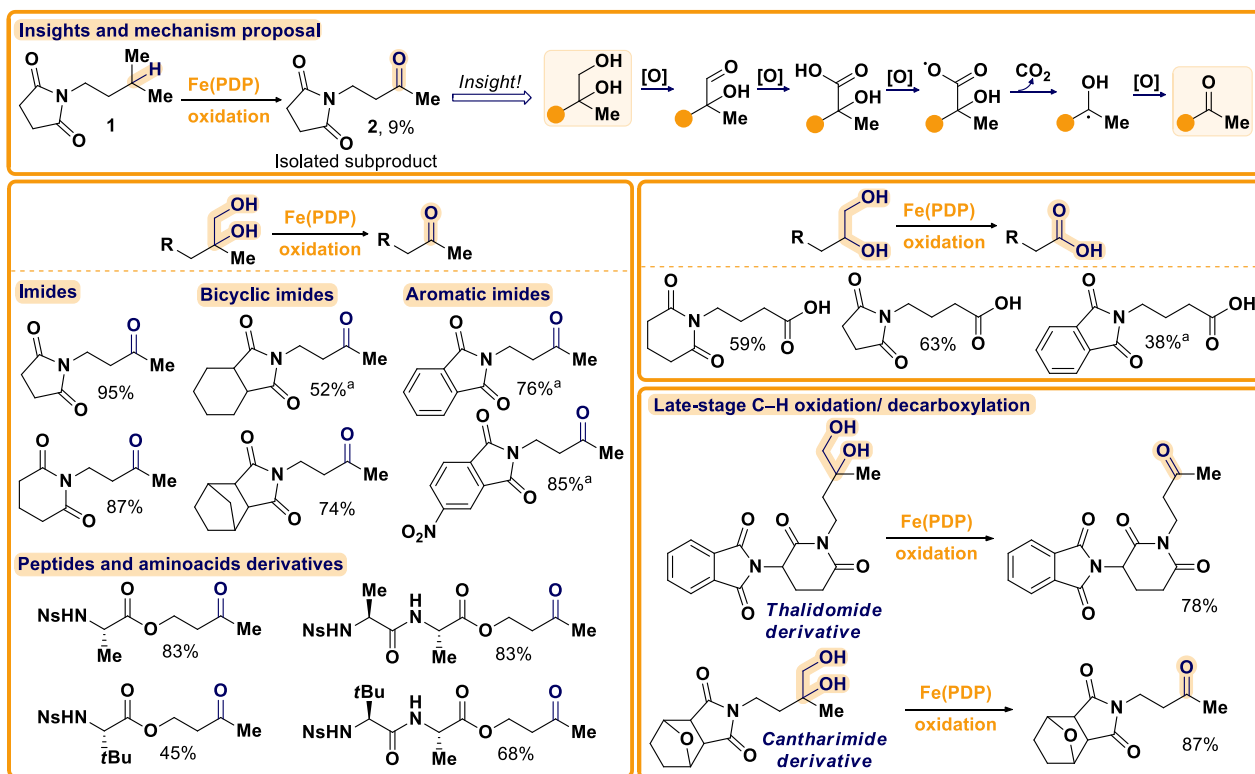
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ABSTRACT

Understanding what byproducts a reaction condition forms can provide good insights into the development of new reactivities. Recently, an unexpected product was observed by our research group in the oxidation of compound **1**, which is known to form only a tertiary alcohol.¹ Besides the methine oxidation, we observed the formation of the methyl ketone **2** in 9% yield (Scheme 1). Therefore, a cleavage of a C–C bond must have occurred. This result urged us to study more closely this reactivity.

Thus, a new method has been developed that allows the oxidation of an aliphatic C–H bonds followed by a decarboxylation using Fe(PDP). This new reactivity using non-heme iron catalysis expands the scope of C–H bond oxidation beyond hydroxylations and desaturations, and facilitates late-stage diversification of complex molecules.



Scheme 1. Scope and complex examples. Reactional condition: 15 mol% Fe(PDP), 5 eq. AcOH, 9 eq. H₂O₂, MeCN, rt, 90 min. ^aUsing 4.5 eq. H₂O₂.

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