Biocatalysts for selective introduction of oxygen

Three types of oxygenase biocatalysts are treated in detail in this review: the non-haem iron alkene mono-oxygenases, the haem and vanadium haloperoxidases, and flavin-based Baeyer-Villiger mono-oxygenases. Other oxygenases are briefly included for comparison. Characteristics of the biocatalysts are presented, and the scope and limitations concerning their applicability for the selective introduction of oxygen are discussed. Key issues include catalytic activity, productivity, cloning and expression, as well as process engineering aspects. Various bottlenecks are identified for the different biocatalysts and measures to increase the number of oxygenase reactions in practical use are discussed.

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