

# Multistep biotransformations: from multifunctional substrates to cascade enzymatic reactions

Sergio RIVA

Istituto di Chimica del Riconoscimento Molecolare, C.N.R., via Mario Bianco 9, 20131 Milano, Italy

[sergio.riva@icrm.cnr.it](mailto:sergio.riva@icrm.cnr.it)

Different synthetic approaches rely on multistep enzyme catalyzed processes. In this presentation recent work in this area from our laboratory will be described.

A first option is given by the exploitation of bifunctional or multifunctional substrates. Specifically the selective modification of complex natural compounds can lead to hybrid derivatives exploiting the regioselectivity of hydrolases with bicarboxylic acids of different chain length [1].

Another modern research topic is finalized to the merging of chemical and enzymatic transformations in one-pot processes. Examples will be discussed related to redox chains [2] and to the combination of heterogeneous catalysts and enzymes [3].

The last part of this presentation will be devoted to some cascade processes based on the combination of dehydrogenases with different cofactor specificities [4], glycosidases with opposite activities [5], enoate reductases with alcohol dehydrogenases or aminotransferases [6].

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