

High value from specialized plant natural products: From source to biocatalytic conversion

Ludger Wessjohann

Bioorganic Chemistry, Leibniz-Institute of Plant Biochemistry (IPB), Halle (Saale), Germany

Contact: wessjohann@ipb-halle.de

The standard for the accession of high value products from plants is extraction from dried crude material, often followed by expensive purification processes. For many products, sufficient natural material is not available for a reasonable price, or not available at all. In these cases biotransformations starting from readily available, cheap natural material can be used to produce the high value products. Usually, many steps in form of biocatalytic cascades are required, commonly requiring side-streams e.g. for co-factor (re-)generation. The ideal pathways often do not follow the natural ones, and often have to be developed de novo with new enzymes or (rationally) adapted ones. The enzymatic cascades can be utilized in vitro, or in the sense of synthetic biology also in vivo. In both cases the proper adjustment of enzyme and reaction properties to be functional in the production system is a crucial and limiting factor.

We will present such enzymatic cascade systems for the syntheses of phenylpropanoid plant natural products for the flavor industry.