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P155 GENETIC ENGINEERING OF THE γ-OXIDATION PATHWAY IN THE YEAST *Yarrowia lipolytica* TO INCREASE THE PRODUCTION OF AROMA COMPOUNDS

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Keywords: γ-oxidation, acyl-CoA oxidase, γ-decalactone

As many yeast species, *Yarrowia lipolytica* is able to transform ricinoleic acid (a hydroxylated C18 fatty acid) into γ-decalactone, a fruity and creamy aroma compound[1]. Unfortunately, this species is also able to degrade the produced lactone. The pathway of biotransformation involves γ-oxidation and requires the lactonisation at the C10 level (when the hydroxy group is in γ -). *Y. lipolytica* possesses a five-member family of acyl-CoA oxidases (Aox1 to 5), the enzyme catalysing the first step of γ-oxidation, some of which are long-chain specific (Aox2)[2] or short-chain specific (Aox3)[3, 4]. In a previous paper, we have tried to decrease the lactone degradation by constructing a strain with no more activity on short-chain substrates[5]. However, this strain was growing and biotransforming very slowly. In this study, we have constructed strains without acyl-CoA oxidase activity for short-chain substrates but with increased activity on long chains. These strains are able to grow at the same rate as the wild type but produce about 10 times more in only 48 hr, and this amount does not significantly decrease in 250 hr.

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P156 SYNTHETIC STUDIES ON HELIANNANE SESQUITERPENES VIA CHEMOENZYMATIC TRANSFORMATION

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Keywords: heliannuol E, heliannuol C, sesquiterpene, lipase, enantioselective synthesis

(-)-Heliannuols E and C are naturally occurring sesquiterpenes exhibiting allelopathic activity[1]. We report herein the enantioselective total syntheses of heliannuols E (ref.[2]) and C employing chemoenzymatic transformations of the prochiral diols **1** and **3** into the optically enriched acetate **2** and **4** as the key reaction steps (Fig. 1). It should be noted that the absolute stereochemistry of heliannuol C was firmly established by the completion of the first total synthesis.

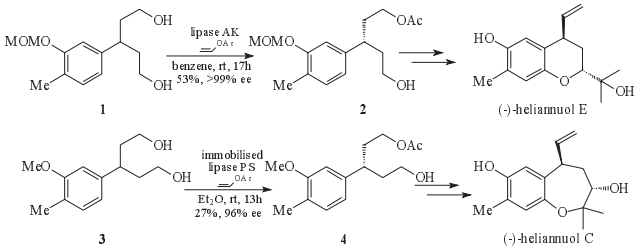

Fig. 1. **Syntheses of heliannuols E and C**

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