crotyl alcohol or 3-buten-1-ol. The present invention satisfies this need and provides related advantages as well.

SUMMARY OF INVENTION

~~The invention provides~~Disclosed herein are non-naturally occurring microbial organisms containing 2,4-pentadienoate, butadiene, propylene, 1,3-butanediol, crotyl alcohol or 3-buten-1-ol pathways having at least one exogenous nucleic acid encoding a butadiene pathway enzyme expressed in a sufficient amount to produce 2,4-pentadienoate, butadiene, propylene, 1,3-butanediol, crotyl alcohol or 3-buten-1-ol. ~~The invention additionally provides~~Also disclosed herein are methods of using such microbial organisms to produce 2,4-pentadienoate, butadiene, propylene, 1,3-butanediol, crotyl alcohol or 3-buten-1-ol, by culturing a non-naturally occurring microbial organism containing 2,4-pentadienoate, butadiene, propylene, 1,3-butanediol, crotyl alcohol or 3-buten-1-ol pathways as described herein under conditions and for a sufficient period of time to produce 2,4-pentadienoate, butadiene, propylene, 1,3-butanediol, crotyl alcohol or 3-buten-1-ol.

Thus, the present invention refers to non-naturally occurring microbial organisms, methods and processes as defined in any one of claims 1, 10, 11, 23, 24, 36, 37, 46, 47, 48, 57, 58, 67 and 68.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 shows exemplary pathways to 3-buten-1-ol, 2,4-pentadienoate and butadiene from 2-oxoadipate, 2-aminoadipate, 5-aminopentanoate and glutaryl-CoA. Enzymes are: A. 2-aminoadipate decarboxylase, B. 5-aminopentanoate reductase, C. 5-aminopent-2-enoate aminotransferase, dehydrogenase or amine oxidase, D. 2-oxoadipate decarboxylase, E. glutarate semialdehyde reductase, F. 5-hydroxyvalerate dehydrogenase, G. 5-hydroxypent-2-enoate dehydratase, H. 2-aminoadipate aminotransferase, dehydrogenase or amine oxidase, I. 5-aminopentanoate aminotransferase, dehydrogenase or amine oxidase, J. 5-aminopent-2-enoate deaminase, K. 5-hydroxypent-2-enoate reductase, L. 5-hydroxyvaleryl-CoA transferase and/or synthetase, M. 5-hydroxypentanoyl-CoA dehydrogenase, N. 5-hydroxypent-2-enoyl-CoA

dehydratase, O. 2,4-pentadienoyl-CoA transferase, synthetase or hydrolase, P. 5-hydroxypent-2-enoyl-CoA transferase or synthetase, Q. 5-hydroxyvaleryl-CoA dehydratase/dehydrogenase, R. 2-oxoadipate dehydrogenase, 2-oxoadipate:ferridoxin oxidoreductase or 2-oxoadipate formate lyase, S. glutaryl-CoA reductase, T. 2,4-pentadienoate decarboxylase, U. 5-hydroxypent-2-enoate decarboxylase, V. 3-buten-1-ol dehydratase or chemical conversion, W. 5-hydroxyvalerate decarboxylase.