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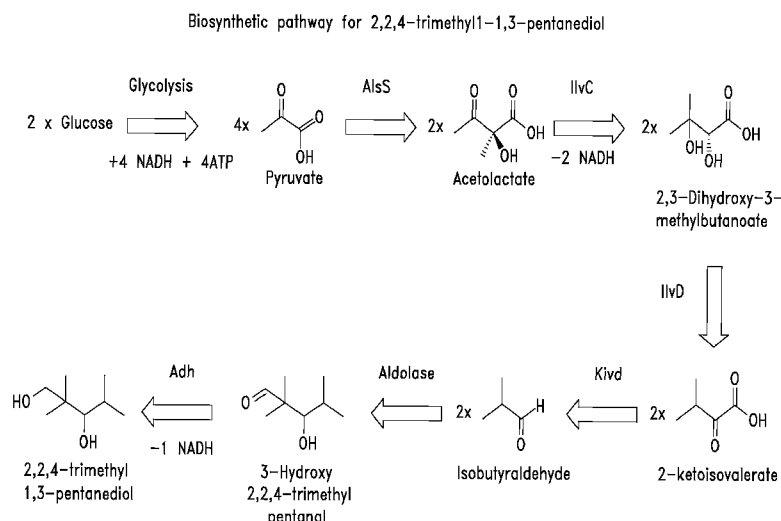


FIG. 1

(57) Abstract: Methods, enzymes, recombinant microorganism, and microbial systems are provided for converting suitable monosaccharides or oligosaccharides, such as those derived from biomass, as well as various aldehydes and/or ketones, into commodity chemicals, such as biofuels. Commodity chemicals produced by the methods described herein are also provided. Commodity chemical enriched, refinery-produced petroleum products are also provided, as well as methods for producing the same.



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