

The Upgrading of Bio-alcohols to Chemicals: The Valsovit Project

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Abstract

The scope of the Valsovit project is the sustainable valorization of the wine industry by-products. In particular, the main goal is the upgrading of marcs, grape seeds, stalks and of the heads and tails mixtures obtained by ethanol distillation processes to valuable chemicals and intermediates such as polymers, cosmetics or agrochemicals. The team is composed by many partners, both from academy (Terra&Acqua Tech, CIRI-EA) and industry sectors (Caviro S.R.L, Eridania Sadam, AmbrosiaLab, CBC Europe, CRPA Lab and L.E.A.P). This joint venture intends to investigate the entire process of the waste upgrading, starting from the preliminary purification treatments until the industrial scale-up of the processes developed, and studying also the real environmental impact of the new products and reactions. In a changing raw materials landscape, the Valsovit project is an example of how, what it was considered previously as waste, becomes a primary source of different valuable products.

One of the major goals of the project is the production of bio-maleic anhydride (bio-MA) by chemical processes starting from the heads and tails of ethanol distillation. The possible different routes for this reaction are presented in Figure 1 and are being investigated by our team using different approaches both in liquid and gas-phase reaction systems. The idea is to develop an innovative homogeneous or heterogeneous multifunctional catalyst. By now, different potential catalytic systems and reactions conditions are being evaluated using pure ethanol as starting material, obtaining very promising results; Once it will be optimized, the actual mixture provided by Caviro distillery will be used in order to assess the feasibility of this approach on industrial scale.

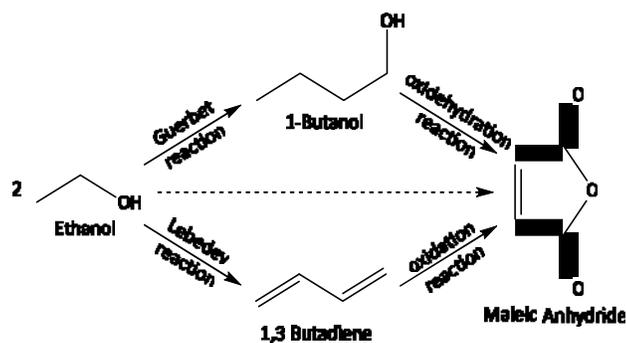


Figure 1. Scheme of reaction for transformation of ethanol into maleic anhydride.