Title: **Design of an industrial process for the Diacetone-β-Fructose (DAF) production.**

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A company is producing Topiramate from DAF and it is buying the DAF to chinese supplier. Now, it is considering the fact of produce the DAF on the same floor instead of buy it to avoid possible related problems with the supply of the raw materials or with the quality of the received product.

The Diacetone-β-Fructose (DAF) is an intermediate in the synthesis process of Topiramate, an antiepileptic drug which can block the spread of seizures. It is used to treat other ailments, such as Lennox-Gastaut syndrome, the bipolar disorder and migraine.

The aim of this project is to plan a batch process to industrial scale for the synthesis of Diacetone-β-Fructose. The size of the batch has to be big enough to allow the production of 20,000 kg/year of Topiramate.

The DAF synthesis is possible taking as a starting raw material both D-Fructose as Sucrose. From the bibliographic study of patents and the obtained data in pilot plant tests, it has been confirmed that the most profitable route is the synthesis of DAF from D-Fructose.

Taking in account that the production does not have limitations of resources but, it has limitations of time, as it seeks to meet the demand of annual desired production of Topiramate, and the fact of that one of the objectives of this project is to realize the production with the minimum number of necessary equipments, it has been detailed in this project the production of 40 batch of 3500kg of DAF each one with the following equipment: 2 vessels (reactors), 2 rotary filters and a rotary dryer, everyone with its auxiliary equipment, control and automation.

With these premises, it has also made the sizing of the equipments, the definition of the operational mode and of the conditions of work and the planning in time of all stages of the production process.

Finally, with an estimated initial investment of 4,200,000 €, the annual production of 140000kg of DAF with 99% of purity in sixteen weeks is achieved.