

The aim of the project is to find an effective catalyst and reaction conditions that enable the selective reduction of the triple bond.

The first important research task will be to find an efficient catalyst, which is a substance that initiates or accelerates a chemical reaction without itself being affected. Another important issue will be the selection of a suitable hydrogen source that would be an alternative to hydrogen gas. The latter is dangerous and difficult to be generated in the laboratory.

An appropriately selected catalyst, source of hydrogen and reaction conditions should allow the synthesis of olefins as a single isomer, *cis* or *trans*. Such "purity" is of high importance since compounds with different double bond configurations can exhibit different chemical properties and different influence on our body. The "real life" example is unsaturated fatty acids. *Cis* isomers are widespread in nature, while *trans* isomers are produced by industrial processes, and it is known that the latter are damaging to our health, lead to atherosclerosis and should therefore be removed from our diet.

After finding the optimal reaction conditions, our method will facilitate the synthesis of compounds such as Epothilone C (potential anti-cancer drug – only the *cis* isomer is active) or Resveratrol (a beneficial effect on the cardiovascular system and normal blood pressure exhibits only the *trans* isomer).

