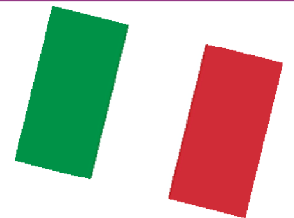


Joint projects



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LIMONENE

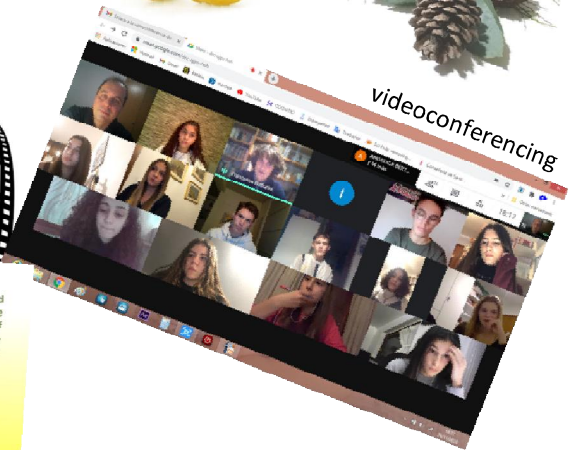


BIOLOGY AND CHEMISTRY OF LIMONENE

TOPICS TO INVESTIGATE

- Molecular structure and characteristics of limonene
- Production of limonene in plants
- Detection of limonene by the smell of the human being
- Bactericidal and fungicidal function of limonene - Uses of limonene.

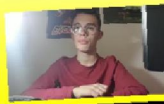
<https://youtu.be/Hf8A825szjk>



ISOMERS

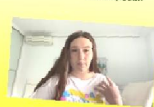
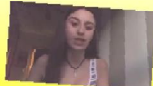
There are two limonene isomers, called (R)-limonene and (S)-limonene. To represent them, reference is made to the IUPAC name of the two molecules:

- ▶ R-(+)-4-isopropenil-1-metil-1-cicloesene
- ▶ S-(-)-4-isopropenil-1-metil-1-cicloesene



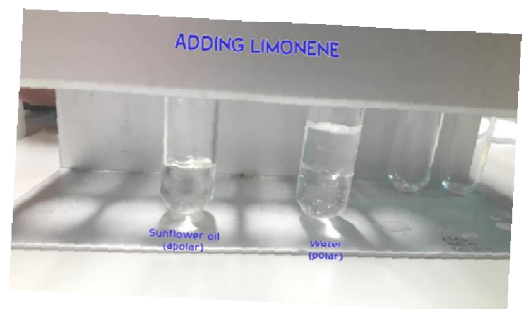
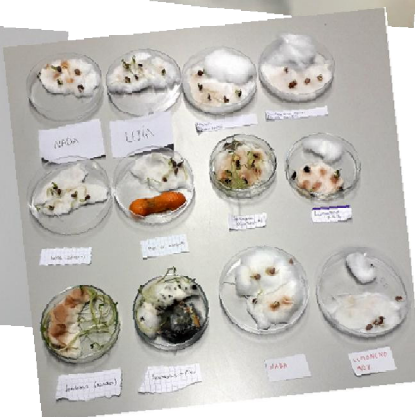
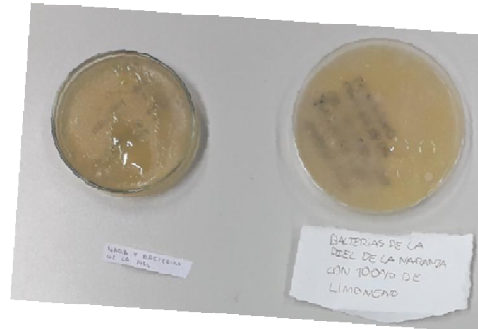
THE TOXICITY

Limonene and its oxidation products are irritating to the respiratory tract and skin. Most cases of irritation are due to long-term industrial exposure to the pure compound, such as during *degreasing* or paint preparation. There is no evidence of humoral carcinogenicity and genotoxicity in humans. In addition, limonene can be oxidized in humid carbon environments, which is a toxic substance. Limonene is biodegradable, but due to its low flash point, it must be treated as hazardous waste for disposal.



EXPERIMENTS

- Optical properties of R and S limonene
- Latex dissolution by limonene (balloons and condoms explosion)
- Differences in smell differentiation between R and S limonene
- Antifungal and antimicrobial activity
 - Dissolution of fats in limonene
 - Anti-germination capacity



We were unable to make our students meet in presence: this pandemic has penalized the development of all planned activities. Students worked as a team, going beyond the distance and the differences in school attendance.