

# To drink or not to drink

## Implementation of a PROFILES module by Israeli teachers

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### Abstract

The module deals with the influence of alcohol on the human body. It includes student activities, teacher background and tips for implementation. The module contains a variety of activities aimed at investigating this topic, and preparing the student for drawing conclusions and making proper decisions. The activities enable the students to: (1) examine the properties of ethanol, which is a component of alcoholic beverages, (2) to understand how alcohol affects our body, and (3) to learn the "blood-alcohol concentration" concept and its meaning.

### Objectives

#### Content objective

- Raising students' awareness regarding the dangers of drinking alcohol
- Recognizing the properties of ethanol.
- Examining the effect of ethanol on substances which are a major part of the cell in the body.
- Recognizing the effect of alcohol on the body's systems and organisms.
- Learning the way in which a special instrument determines the blood alcohol concentration.

did you know?

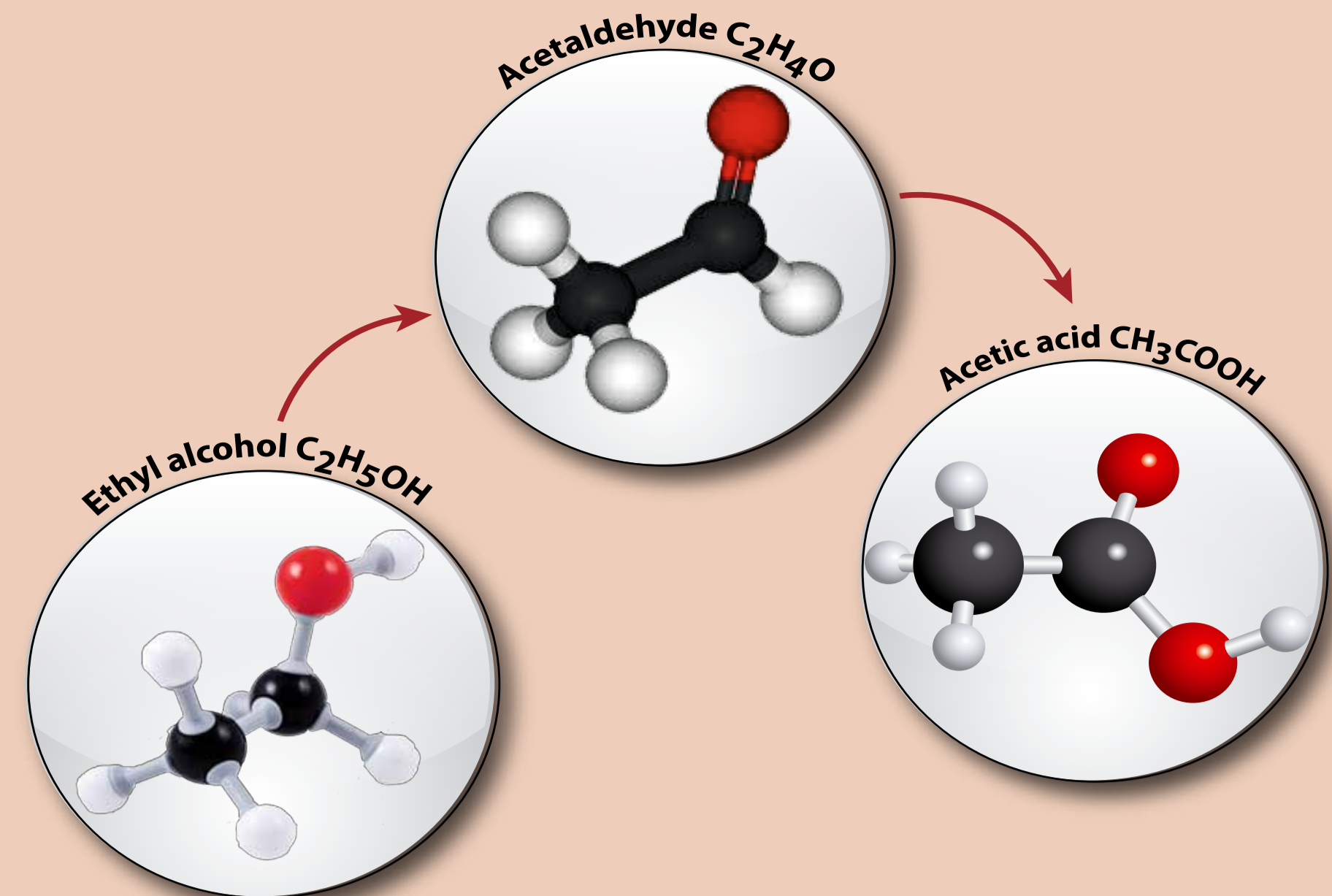
Alcohol causes the expansion of peripheral blood vessels resulting in loss of body heat.

#### Skills objectives

- Performing an experiment according to guidelines.
- Recording observations.
- Organizing the experiment results in the table (constructing a table, selecting criteria to show the table).
- Comparing the differences between the properties of water and ethanol.
- Searching and retrieval of information from relevant sources.
- Formulating of claim and reasoning.

did you know?

Breaking down alcohol in the body is at a constant speed that is independent of any external action like a cold shower or drinking coffee.



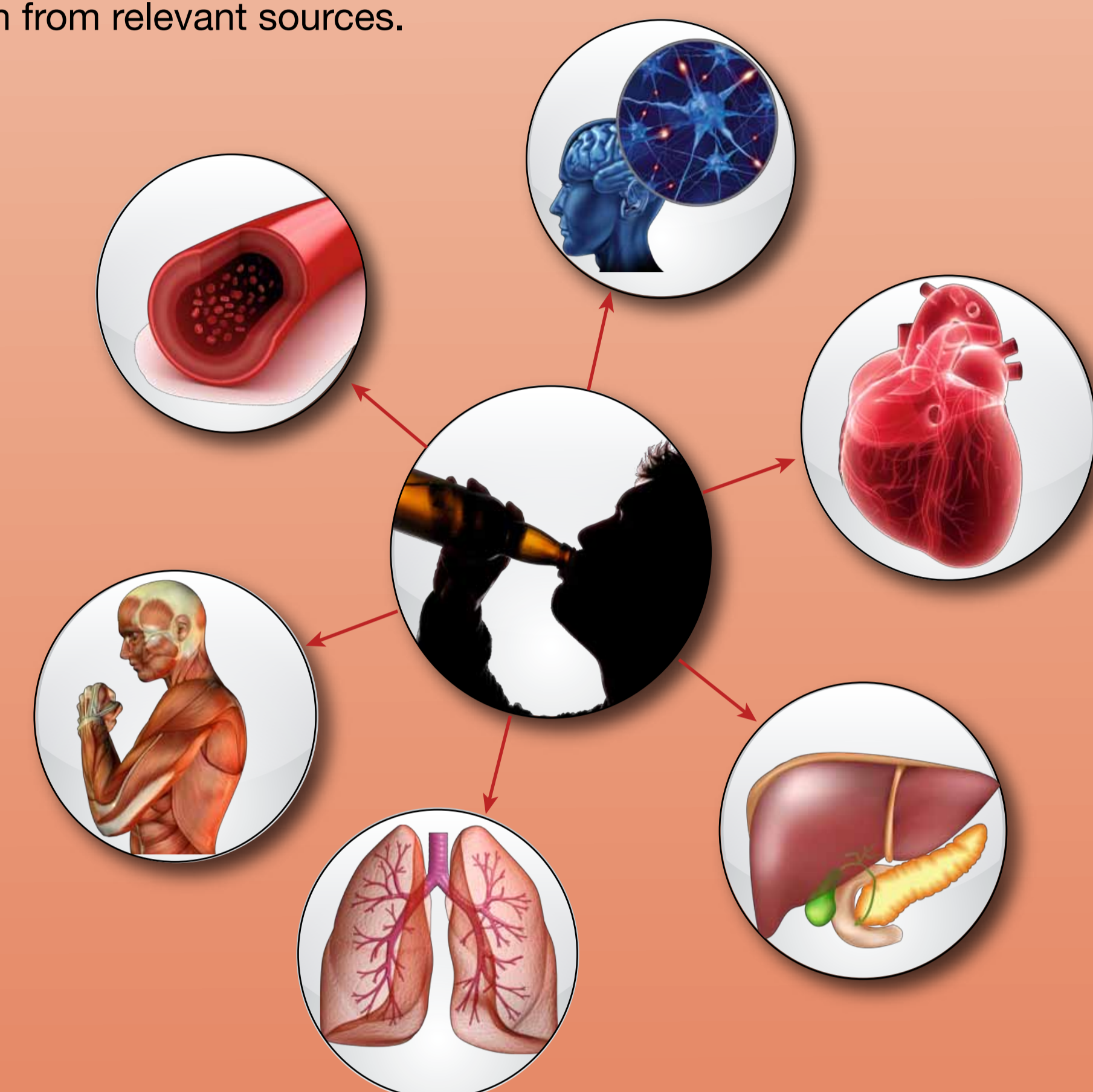
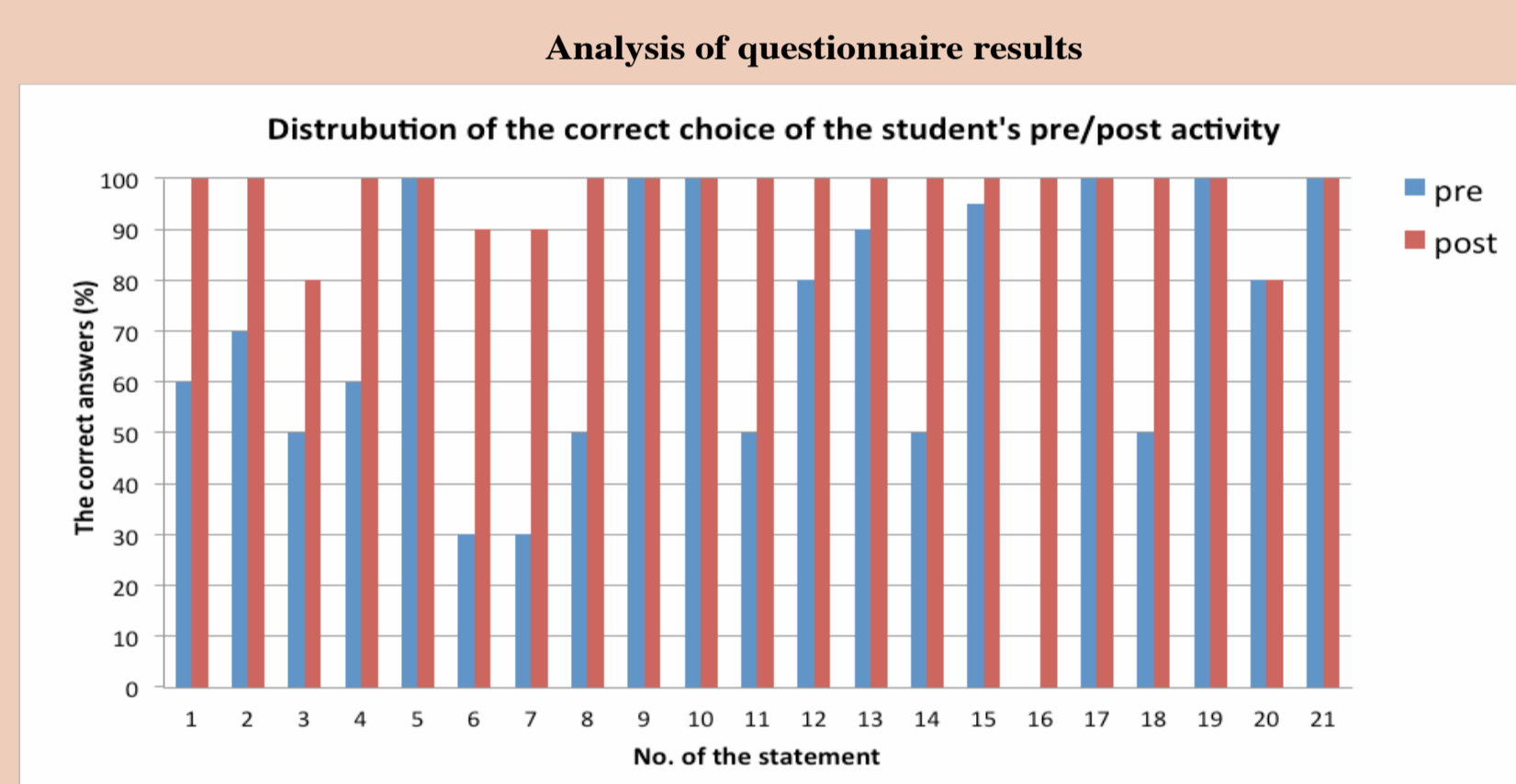
What happens to alcohol in the body

### Activities

1. Opening scene: Exposure to the subject by critical reading of an article from a newspaper.
2. Disseminating a pre/post questionnaire: Examination of prior knowledge about the influence of alcohol, in order to see if there will be changes in knowledge and perceptions during studying the module.
3. Performing an experiment: Familiarity with ethanol and comparison between its properties and water properties.
4. Calculation of the amount of alcohol in beverages.
5. Ethanol concentration in blood: Calculation of ethanol concentration in blood over time in order to determine who is fit to drive after a party.
6. Decision making: the students learn about the effects of alcohol on the body system, and express their opinion whether it is worthwhile to drink.

#### Statements that showed the most significant change in students' answers:

1. Drinking alcohol warms the body (60%)
2. Drinking beer solves the thirst (60%)
3. Girls get drunk faster than boys (50%)
4. Coffee helps to sober up quickly (50%)
5. Alcohol which didn't decompose or was not removed from the body causes "hangover" (100%)
6. Alcoholic drinks are low calorie drinks (50%)



did you know?

Aldehyde acetate - not ethanol itself, is responsible for the phenomenon of "hangover"

### Evaluation of the student's work

The evaluation of the module is done by alternative assessment, according to certain rubrics, referring to each stage of the module implementation:

- (1) performance of an experiment according to the guidelines,
- (2) list of observations,
- (3) results interpretation,
- (4) use of relevant knowledge,
- (5) drawing conclusions,
- (6) reasoning that grant,
- (7) asking questions,
- (8) use of information sources, and
- (9) presentation of all the above in class.

#### Outcomes



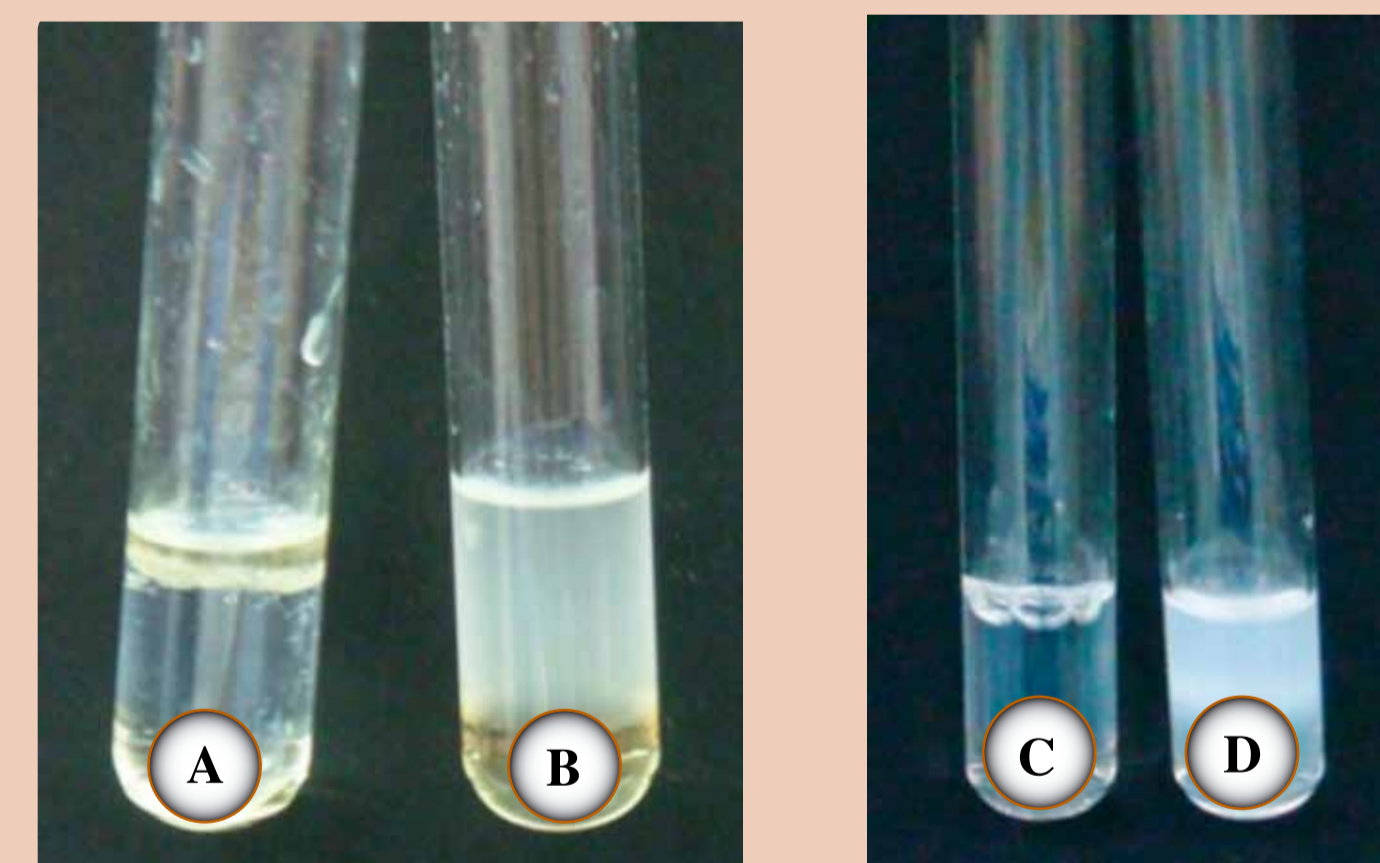
did you know?

Caloric value:  
Can of beer (330 ml) 150 Kcal  
Cup of wine (150 ml) 150 Kcal  
Alcohol (50 ml) 140 Kcal

### Module implementation

- Population: 10th grade students
- 5 lessons
- Style of teaching: Group work - three students
- Deliverables: Each group could produce a product that expresses the attitudes of students toward drinking alcohol.

#### Experiment: A comparison between the properties of water and ethanol



A. oil with water  
B. oil with ethanol  
C. albumin with water  
D. albumin with ethanol

did you know?

Maximum concentration of alcohol in blood was measured 35-40 minutes after drinking

### Students' reflection

- I really enjoyed the activities on alcohol. Most adults tell us that it's not healthy, and that we should not drink, but this module taught us what is caused by drinking.
- I think that it showed me a different perspective; it gave me the awareness of drinking and made me understand the consequences. I was very happy to work in a group.
- In my opinion, it is necessary to teach and pass this activity to all the students in school.
- I enjoyed being part of the learning process.
- The activity was really nice, and it is good that it was done in the framework of chemistry lessons. Like many guys I thought that I knew a lot about alcohol, but finally I noticed that what I knew was NOT true."

### Teachers' reflections

- Following the implementation of the module in class, I realized how relevant the topic is to the students, and interest.
- A collaboration between chemistry and biology teachers is recommended.
- There is still a need for improving the module and any additional implementation will lead to changes and improvements.
- The students' roles changed - they became independent learners.
- I intend to continue implementing the module in the next years. I would like to show students from various age groups, that drinking alcohol is not necessarily an "entrance ticket" to the adult world.
- I would like to share with other teachers the implementation of the module; I believe that implementing the module by different teachers will contribute to its improvement.