

Teacher Guide for
Antioxidant Enzymes: Three or Four Veggies a Day Keeps Aging Away
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Segment :1

Dear colleagues I hope you take these notes into consideration when you show this module to your students should bring a big bowl of colored fruits and vegetables and exhibit it to the students .

the students at this stage should have the basic knowledge of the enzyme structure ,function and the factors that affect their reaction rate.

So during the first pause students should recall and summon up their previous knowledge about enzymes, since the rest of work is based on this knowledge.

Segment: 2

The teacher should discuss with the students their previous knowledge about enzymes as mentioned before and expand this knowledge concerning their action and structure.

During the pause the students should think of some wastes; the free radicals are produced by cell during the metabolic activities of the cell.

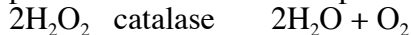
The students might not know these wastes so explaining and elaborating on this matter are not required .

one example of cell wastes (a free radical) the student should know: Hydrogen peroxide,

Segment : 3

You should explain what are the antioxidant enzymes and how they are intimately involved in the prevention of cellular damage the common pathway for cancer, aging, and a variety of diseases ,and how the antioxidants are also thought to have a role in slowing the aging process and preventing heart disease and strokes.

you can mention the names of the antioxidant and elaborate only on the enzyme catalase, blackboard is required to write the equation of the reaction of this enzyme with hydrogen peroxide and to show the production of water and oxygen.



The students should make the conclusion for this experiment according to their observation.

Segments : 4 and 5

You should discuss the students conclusion and start to direct their attention to the fresh fruits and vegetables you had exhibited at the beginning of the lesson and should tell them that the fresh fruits and vegetables have also these antioxidant enzymes which can be proven by experiments.

Segment: 6

You should discuss the students' conclusion regarding their observation for the previous experiment on the food samples.

And you should explain with elaboration the importance of eating raw and fresh fruits and vegetables and compare them to the cooked and preserved.

Extension:1

The teacher might raise this issue: EVERYBODY LOVES ENZYMES?

Well not really... and then ask the students to elaborate more and to give appropriate explanation.

The students are expected to come up with different answers and the following answer might be one of them:

Other answer might be related to microorganisms extracellular enzymes which cause the fresh fruits, vegetables and other agriculture products spoilage and rotting. The previous assignment can also be given to students as a homework.