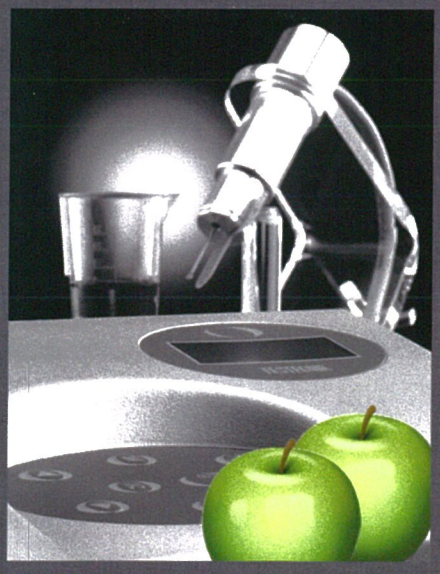
Senzytec2

to monitor apples and pears condition
in *Dynamic Controlled Atmosphere*

Dynamic controlled atmosphere (DCA)

The operation principle of DCA is based on varying the percentage of oxygen, reaching very low levels (<0.5%) during the so called "**stress periods**". Fruit preservation can thus be prolonged, with quality and nutritional aspects being maintained without using any chemicals.

However, when subjected to hypoxic conditions, the fruits change their metabolism radically, with fermentative metabolic pathways taking place (i.e. production of ethanol).



A new multilayer biosensor was developed for monitoring the stocking process of fruits stored in dynamic controlled atmosphere (DCA), by measuring ethanol with extreme specificity.

Ethanol production

In DCA, ethanol production indicates that the desired stocking conditions have been reached, but after the "stress period" oxygen concentration needs to be increased, in order to allow for a complete removal of the alcohol produced. In fact, high levels of ethanol can compromise fruit organoleptic properties.

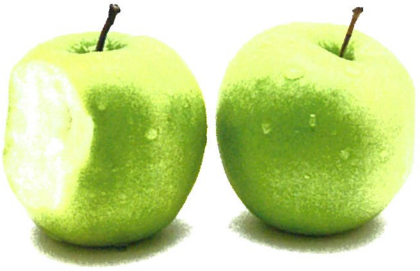
Senzytec2 is an innovative biosensor based system able to determine the concentration of different analytes in food matrices in a quick and reliable way

It is therefore extremely important to precisely monitor what happens directly in the fruits to follow the entire stocking process. Measuring the stress conditions of the fruits gives crucial indications on how to control the process (i.e. O2 and CO2 levels).

Several tests on apples and pears stocked in the Trentino region (Italy) demonstrated how **Senzytec2** can be successfully used to monitor DCA processes and guide their control.

Senzytec2 ensures quick, easy and reliable measurements of ethanol concentration, even at very low levels (<10-20 ppm), like those after harvest or at the end of the stocking period.

The analysis can be carried out **directly on the fruit juice**, with no sample pre-treatment required. **Senzytec2** is currently implemented to monitor several DCA systems.



There are no other such simple and informative ways commercially available at the moment to monitor DCA stocking process of different types of fruit.

DCA
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Stress
↓
Ethanol production
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Analysis with Senzytec2
↓
DCA control

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