



## Lipid oxidation and co-oxidation reactions in oleosome dispersions from various sources: Which constituents are involved?

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# Lipid oxidation and co-oxidation reactions in oleosome dispersions from various sources: Which constituents are involved?

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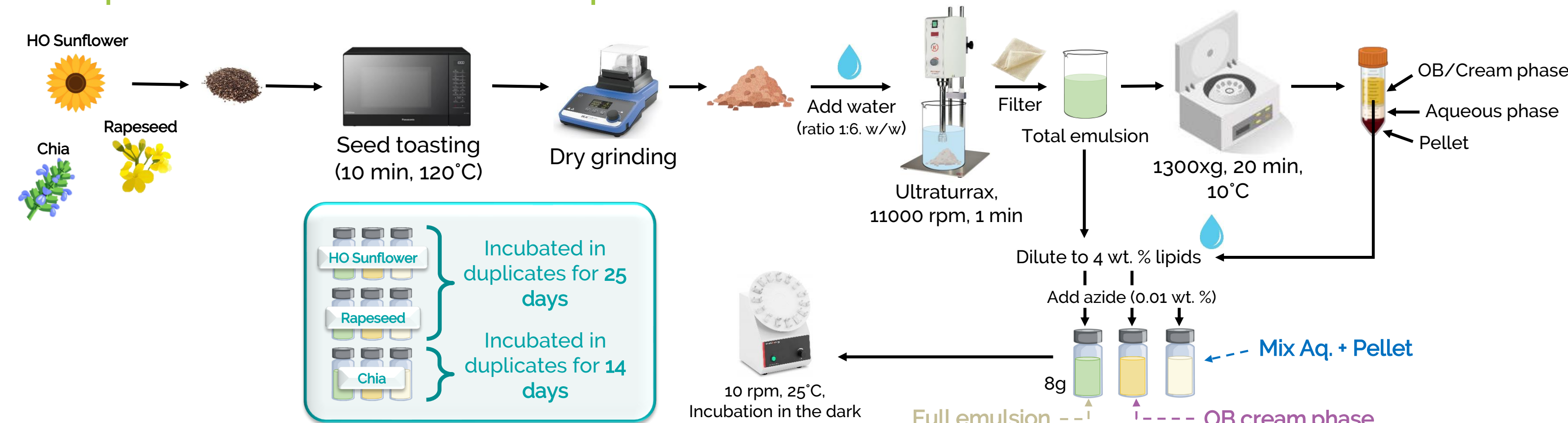
## INTRODUCTION AND CONTEXT

In a context of shifting human diets towards alternatives with increased sustainability and nutritional quality, a strong interest has emerged in promoting the use of plant-based and minimally processed food ingredients and products. Amongst the many options that are currently in the spotlight, **oilseeds** have raised strong interest, as they are rich in **polyunsaturated fatty acids (PUFAs)** and other valuable components (**proteins, antioxidants**, etc.).

To make the extraction of lipids from these oilseeds **more environmentally friendly**, we studied lipids in the form of **oil bodies (OB)**, also known as **oleosomes**. Given their high PUFA content, assessing their **oxidative stability** is a logical step when targeting **food applications**. **OB dispersions** from **high oleic sunflower** seeds, **rapeseeds** or **chia** seeds were prepared and **incubated** under selected conditions to monitor their **physical** and **oxidative stability** over time.

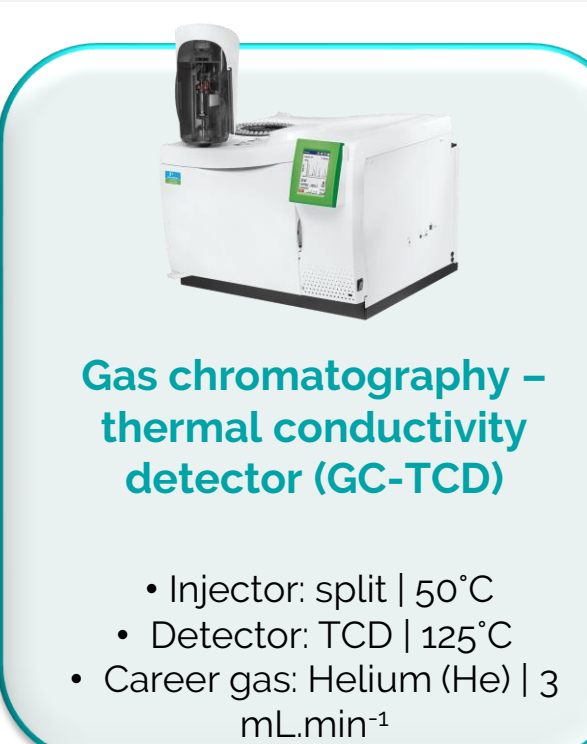
## EXPERIMENTAL APPROACH

### 1. Preparation of oleosome dispersions and incubation

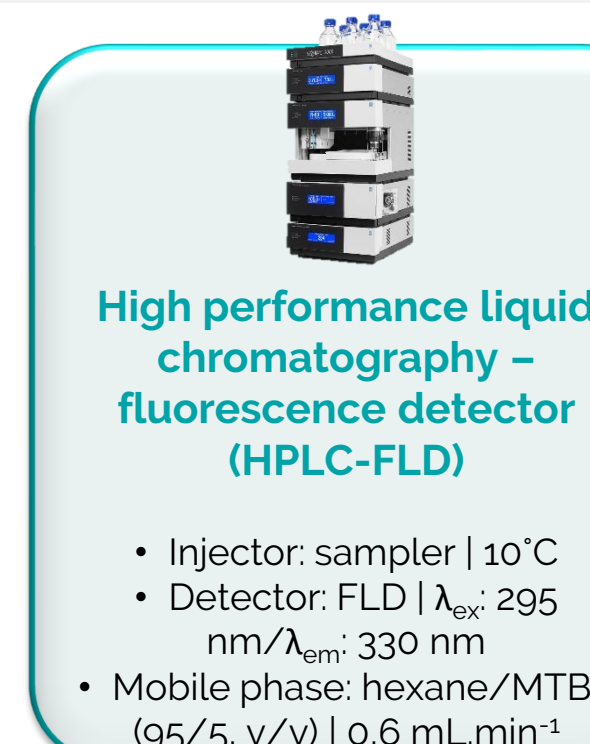


### 2. Analytic methods

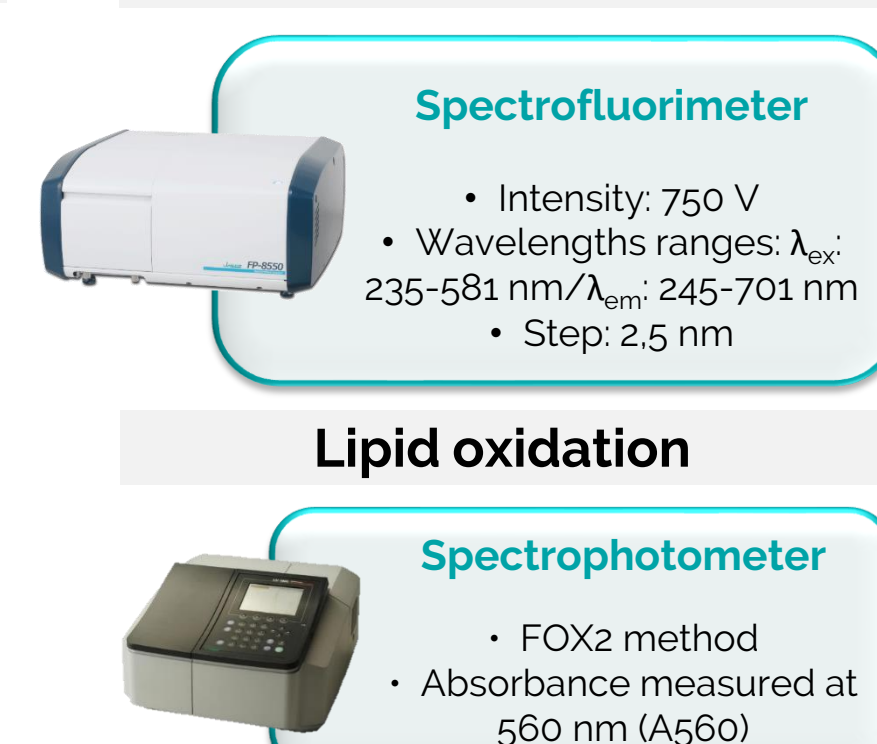
#### Oxygen consumption



#### Antioxidants

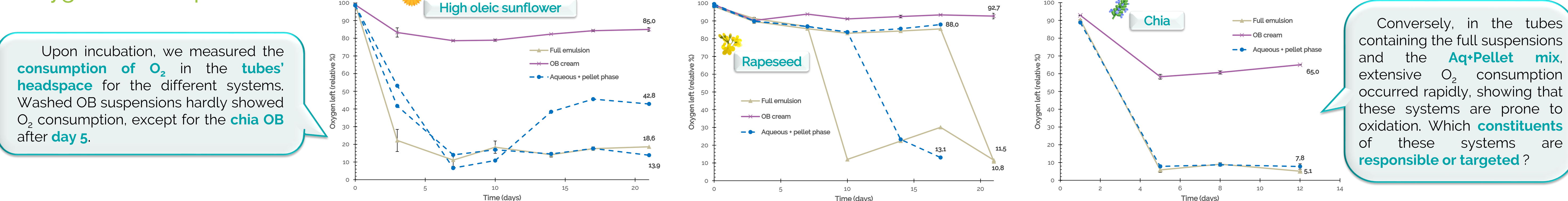


#### Protein oxidation

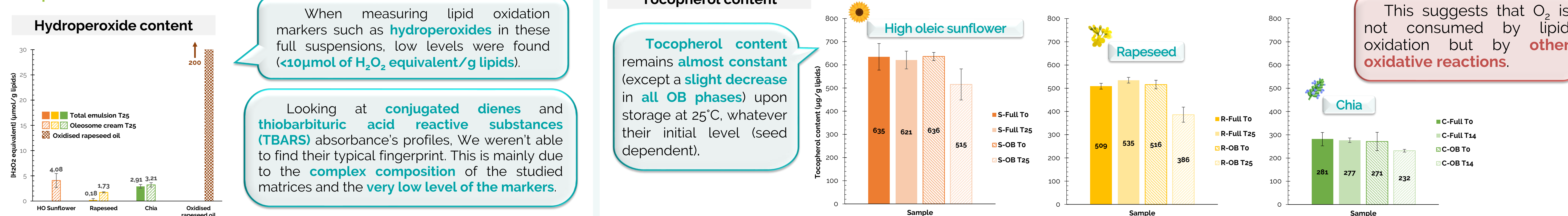


## RESULTS

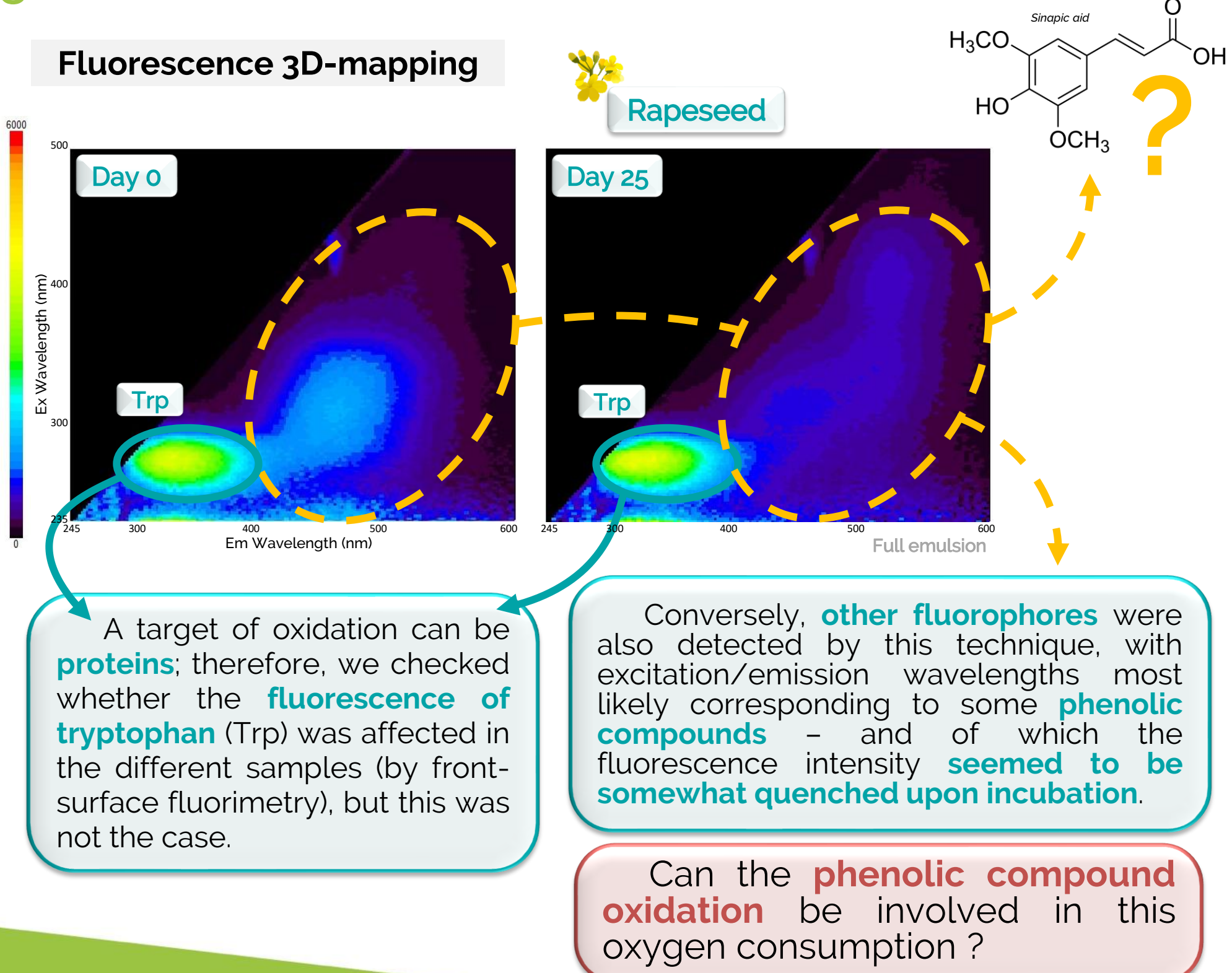
### 1. Oxygen consumption



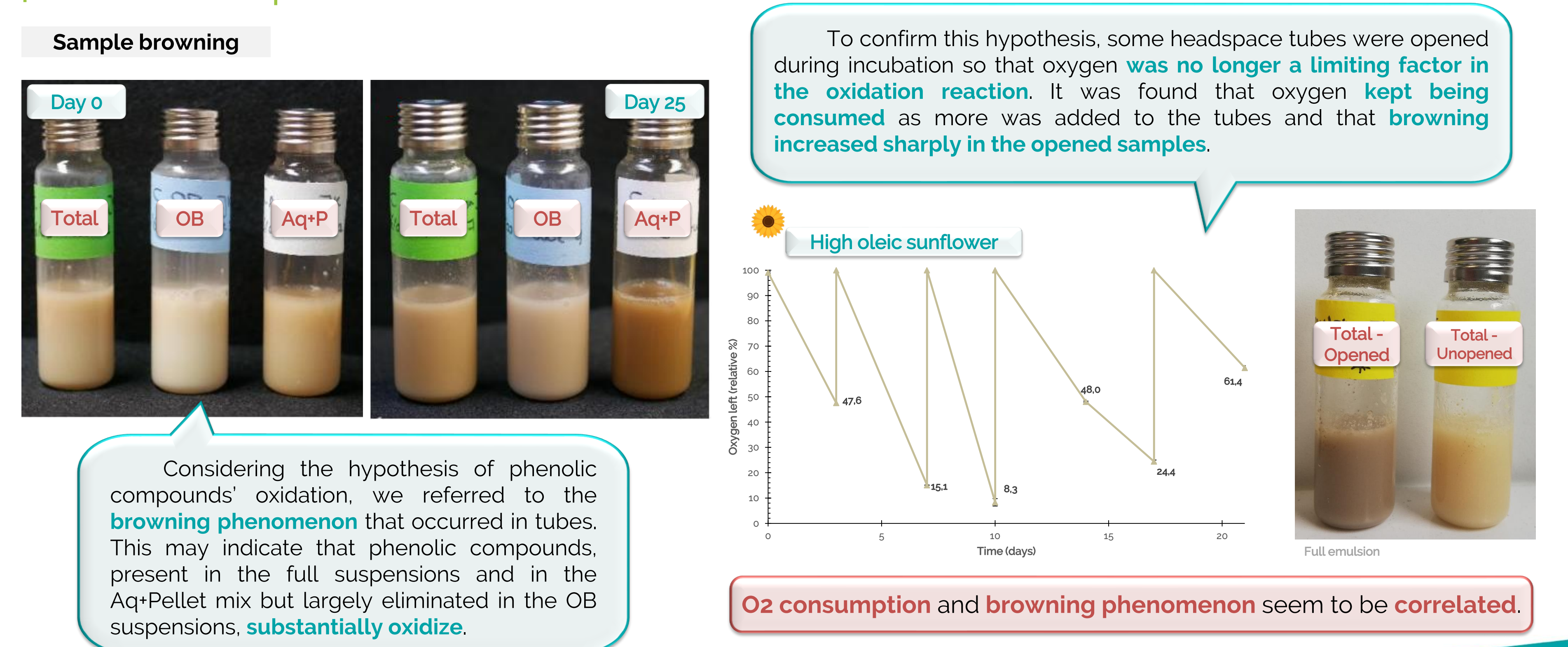
### 2. Lipid oxidation ?



### 3. Protein oxidation ?



### 4. Phenolic compound oxidation ?



## CONCLUSIONS AND PROSPECTS

- These results confirm that OB overall exhibit a good resistance to lipid oxidation, as often claimed in literature. Yet, it reveals that other oxidative reactions may be at play in such systems, involving the non-OB constituents of the oilseeds.
- Further investigations of the exact substrates and reactions involved are ongoing, and will be important outcomes to rationalize the extent of purification that is needed to yield stable OB systems for applications.