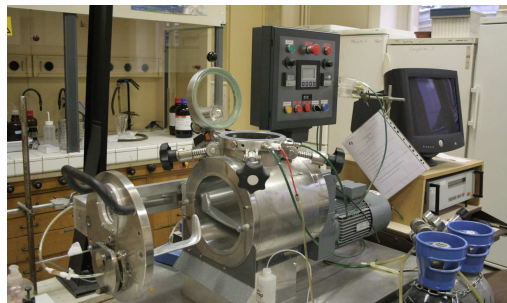


# Study of the oxidoreducing reactions (enzymatic and non enzymatic) affecting food quality

<p><b>Wheat</b></p> <p><b>CEREAL PRODUCTS</b></p>	<p><b>Barley and malt</b></p>	<p><b>FRUIT AND VEGETABLES</b></p> <p>Apple, eggplant, lettuce, mushroom, potato</p>
<p>Lipoxygenase (LOX), peroxidase (POD), catalase (CAT), ascorbate oxidase, glutathione dehydroascorbic oxidoreductase, polyphenol oxidase (PPO)</p>	<p><b>Endogenous enzymes</b></p> <p>PPO, LOX, POD, CAT</p>	<p>PPO, POD</p>
<p><i>Extraction, purification and kinetic properties. Inhibition studies and varietal effect</i></p>		
<p><b>Mixing, fermentation</b></p> <p>Evolution of lipids, carotenoid pigments, thiols, phenols. Gluten protein structuration</p> <p>Evolution of O<sub>2</sub> uptake and CO<sub>2</sub> production, consistency and temperature of the dough</p> <p>Effect on enzyme activities</p>	<p><b>Effect of the process</b></p> <p><b>Soaking, germination, kilning</b></p> <p>Effect on endogenous enzyme activities</p>	<p><b>Juice and purée processing, slicing</b></p> <p>Modification of endogenous enzyme activities and phenols oxidation</p>
<p>Bromate, iodate, ADA, ascorbic acid (AA), deactivated yeast, cysteine (CSH), glutathione (GSH), phenols</p> <p><b>On dough properties</b></p>	<p><b>Effect of added chemicals</b></p> <p>Phenols, hydrogen peroxide, CSH, AA, GSH, Maillard reaction products (MRP), coffee extract</p>	<p><b>Effect of Maillard reaction products (MRP) on enzyme systems</b></p> <p>Controlled production of MRP</p> <p>Inhibition studies with MRP</p>
<p><b>Effect of added enzymes on dough properties</b></p> <p>Glucose oxidase, sulfhydryl oxidase, lipase, phospholipase, amylase, xylanase, laccase, soybean and horsebean flour (LOX)</p>	<p><b>On LOX activity (purified from barley, soybean, horsebean and wheat)</b></p> <p><b>Work on model systems</b></p>	<p><b>Prevention of enzymatic browning</b></p> <p>Addition of chemicals (sulfites, AA, CSH, GSH, MRP)</p> <p>Inhibition of PPO</p>



## Tools

← **SITOXOGRAPH:**  
 Instrumented dough mixer (gas and temperature sensors...)  
 Continuous measurement of the evolution of O<sub>2</sub> and CO<sub>2</sub>, consistency and temperature of the dough

HPLC: diode array, light scattering, electrochemical, refractometer and fluorimeter detectors  
 Gas chromatography (flame ionisation detector)  
 Spectrocolorimeter (L\*a\*b), polarograph, tensiometer, texturometer, consistograph  
 Ultrafiltration, electrophoresis, liquid electrofocusing, chromatography (ion exchange, hydrophobicity, affinity, gel filtration, FPLC)