

Communications de 1998 à 2001

DOUSSOT J., RAKOTOZAFY L., FALGUIERES A., GARCIA R., GUY A., NICOLAS J., 2001. Contribution à l'étude de l'oxydation enzymatique in vitro des dérivés de l'acide férulique. (Poster aux journées de chimie organique, Ecole Polytechnique 11 - 13 Septembre 2001).

POTUS, J. (2001). Notre pain quotidien. *Les conférences Roberval*, Université de Technologie de Compiègne.

POTUS, J. (2000). Le pain et les enzymes. Tradition et évolutions récentes. Communication orale. *Conférences des pôles de recherche du département SCBN du Cnam*, Paris.

EL AMRANI F., FAYOL O., NERON S., DRAPRON R., NICOLAS J. 2000. Une méthode rapide de mesure de l'activité lipasique en milieu peu hydraté. (Poster aux 51èmes Journées Techniques de la Meunerie Française, Paris, Novembre 2000).

NICOLAS J. (1999). Polyphénols et brunissement enzymatique. Séminaire ACIA " Rôle des polyphénols en alimentation et santé humaine ", 14 Décembre 1999 , Massy. Communication orale. *Ind. Agric. Alim.*, 117, 20-24 (décembre 2000).

BILLAUD C., GARCIA R., KÄHLER B., NERON S., BOIVIN P., NICOLAS J. (1999). Possible implications of four oxidoreductases (polyphenoloxidase, catalase, lipoxygenase and peroxidase) present in brewery's barley and malt on organoleptic and rheological properties of mash and beer. *2nd European symposium on enzymes in grain processing*, 8-10 December 1999, Helsinki. Poster. *VTT Symp.*, (2000), 207, 247-250. **Abstract** : Polyphenoloxidase (PPO), peroxidase (POD), catalase (CAT), and lipoxygenase (Lox) activity levels present in native barleys, green and kilned malts were compared. Implication of PPO on the final coloration of mash and formation of beer haze seemed to be negligible. POD was involved in oxidative polymerization of phenolic substrates resulting in increased wort color and turbidity, acted unfavorably on flavor quality and stability with formation of beer haze, and implicated in lautering and filterability of mash and beer. Action of Lox 1 at the 1st steps of malting was predominant for organoleptic quality (staling) of beer and Lox was involved possibly in altering filterability capacity of wort. Antioxidative capacity of CAT during malting and at the beginning of the brewing process was supposed to be involved, but its action depended on endogenous level of H₂O₂.

VIGNAUD C., RAKOTOZAFY L., LOUARME L., GARCIA R., KAID N., NICOLAS J. (1999). Purification and characterization of *Aspergillus niger* sulfhydryl oxidase. *2nd European symposium on enzymes in grain processing*, 8-10 December 1999, Helsinki. Poster. *VTT Symp.*, (2000), 207, 273-276. **Abstract** : Many oxidoreductases act on small thiols - e.g., glutathione-dehydroascorbate oxidoreductase (DHA-Red) or sulfhydryl oxidase. The aim of this work is to develop a purification procedure of *Aspergillus niger* sulfhydryl oxidase and then examine some of its kinetic properties in order to compare it with the wheat flour DHA-Red.

GARCIA R., LOUARME L., TELEF N., RAKOTOZAFY L., BILLAUD C., NICOLAS J. (1999). Oxidation of ferulic acid by purified wheat germ peroxidase coupled with different glucose oxidases. *2nd European symposium on enzymes in grain processing*, 8-10 December 1999, Helsinki. Poster. (2000) , *VTT Symp.*, 207, 251-255. **Abstract** : Activation was compared of purified wheat germ peroxidase (POD) by hexose oxidase (HOX) from *Chondrus crispus* and Glucose oxydase (GOX) from *Aspergillus niger* by following ferulic acid oxidation. Ferulic acid oxidation. was slightly faster with the HOX-POD association as compared to the GOX-POD association. HOX activated the ferulic oxidation by wheat POD more efficiently than GOX when initial Glucose concentration. was lowered. HOX-POD association. oxidized ferulic acid faster than GOX-POD association. O₂

consumption slowed down more rapidly with GOX than with HOX if the initial rate was equivalent for both enzymes. The affinity for O₂ was assumed to be higher for HOX than for GOX. HOX was more effective to increase dough strength and bread volume than GOX used in the same dosage.

CASTELLO P., BARET J.L., POTUS J., NICOLAS J. (1999). Biochemical and technological effects of lipases in breadmaking. 2nd *European symposium on enzymes in grain processing*, 8-10 December 1999, Helsinki. Présentation orale. *VTT Symp.*(2000), 207 193-199. Abstract : A study was conducted to verify the technological effects of exogenous lipases in a classical French bread recipe and process, to analyze the biochemical changes induced by these enzymes in dough and to evaluate the biochemical origins of their technological effects. Results indicated that exogenous lipases increase the dough elasticity and decrease the extensibility. If a slight increase of the elasticity allows to improve the dough handling properties, an excess of elasticity degrades these properties. Also, exogenous lipases modify the bread volumes, and an optimal concentration was observed which allows to increase the bread volume. This optimal concentration may vary according to the wheat properties and the breadmaking process. Findings also indicated that the biochemical changes induced by exogenous lipases follow a kinetic which varies according to the enzyme concentration.

NICOLAS J., POTUS J. (1999). Interactions between lipoxygenase and other oxidoreductases in baking. 2nd *European symposium on enzymes in grain processing*, 8-10 December 1999, Helsinki. Conférence plénière invitée. *VTT Symp.* (2000), 207, 103-120. Abstract : A review with 118 references. Topics discussed include the redox phenomena during dough mixing; the effects of lipoxygenase in breadmaking; the effects of other oxidoreducing enzymes such as peroxidase, catalase, polyphenoloxidase, ascorbic acid oxidase, dehydroascorbate reductase, protein disulfide isomerase, and glucose and sulfhydryl oxidases; and the interrelationships between lipoxygenase and other oxidoreducing enzymes.

TELEF N., RAKOTOZAFY L., VIGNAUD C., LOUARME L., POTUS J., NICOLAS J. (1999). Effet de l'association sulfhydryle oxydase - peroxydase sur la disparition de l'acide férulique. 50^{èmes} *Journées Techniques de la Meunerie Française*, Paris, Novembre 1999. Poster. *Industries des Céréales* (2000), 115, page 35.

BILLAUD C., NICOLAS J. (1999). Possible implications of four oxidoreductases (polyphenoloxidase, catalase, lipoxygenase and peroxidase) present in malting's barley and malt on organoleptic and rheological properties of mash and beer. EBC flavour and flavour stability sub-group meetin. IFBM - Nancy, 25-26 October 1999. Conférence orale.

NICOLAS J. (1999). L'oxydation enzymatique des lipides polyinsaturés dans les produits alimentaires. Lipoxygénases et produits céréaliers. Stage de formation continue CIIA " Oxydation, anti-oxydants et qualité des aliments ", 13-14 Septembre 1999, Paris (INAPG). Communication orale.

NICOLAS J. (1999). Le brunissement : paramètres du brunissement des produits transformés. Stage de formation continue CIIA " Technologies de transformations de la pomme ", 26-27 Mai 1999, Paris (INAPG). Communication orale.

BILLAUD C., NICOLAS J., NERON S., BOIVIN P. (1999). Evolution des activités catalasiques et peroxydasiques de différentes variétés d'orge au cours du maltage. *Proc. 27th European Brewery Convention*, Cannes, 25-28 Mai 1999, 453-460. Poster. Evolution of catalasic and peroxydasic activities of different barley varieties during malting. Abstract : Catalasic (CAT) and peroxydasic (POD) activities were measured on 9 varieties of spring and winter barley during malting and kilning, by polarography (for CAT) or by spectrophotometry with ferulic acid or guaiacol as substrates (for POD). Germination strongly increases CAT activity (14-38 times) but scarcely affects POD (0,8-2). Kilning results in a loss of activity, depending on the thermosensibility of the isoenzymes, but, overall, CAT and POD activities of kilned malts are higher than in the original barley. Their contribution to lipid peroxidation during the brewing process will be discussed.

NICOLAS J., POTUS J. (1999). La recherche en biochimie et technologie céréalière au Cnam. (Conférence présentée aux Journées de l'ENSMIC, Novembre 1998). *Industries des Céréales*, 113, 4-6.

RICHARD-FORGET F., CERNY M., DE RIGAL D., FAYAD-EL DAHOUK N., VAROQUAUX P. (1998). Antibrowning efficiency of papaine extracts. *Proc. 19th International Conference on Polyphenols*, Lille, 1-4 Septembre 1998, *Polyphenol Communications* 98, 18, (2), 265-266. Communication orale.

BILLAUD C., KÄHLER B., BOIVIN P., NICOLAS J. (1998). Involvement of cationic and neutral / anionic peroxidases from brewery barley (*Hordeum vulgare* L.) in the oxidation of phenolic substrates. *Proc. 19th International Conference on Polyphenols*, Lille, 1-4 Septembre 1998, *Polyphenol Communications* 98, 18, (2), 405-406. Poster.

