

Tailoring flavour and texture

Publications

2009

Partanen, R., Paananen, A., Forssell, P., Linder, M.B., Lille, M., Buchert, J. & Lantto, R. 2009. Effect of transglutaminase-induced cross-linking of sodium caseinate on the properties of equilibrated interfaces and foams. *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, In Press.

2008

Heiniö, R.-L., Buchert, J., Kaukovirta-Norja, A., Myllymäki, O., Katina, K., Lehtinen, P., Selinheimo, E. & Kaisa Poutanen. (Bio)technical tools to tailor cereal flavour. Proceedings of Consumer driven cereal innovation: Where science meets industry. Weegels, P.L., Courtin, C.M., Arrachid, A. & Silvestri, M. (eds.), AACC International, Inc., Minnesota, USA, 2008. p. 21-23.

Heiniö, R.-L., Liukkonen, K.-H., Myllymäki, O., Pihlava, J.-M., Adlercreutz, H., Heinonen, S.-M. & Poutanen, K. 2008. Quantities of phenolic compounds and their impacts on the perceived flavour attributes of rye grain. *J. Cereal Sci.* 47, 566-575.

Mattinen, M.-L., Lantto, R., Selinheimo, E., Kruus, K., & Buchert, J. 2008. Oxidation of peptides and proteins by *Trichoderma reesei* and *Agaricus bisporus* tyrosinases. *J. Biotechnol.* 133, 395-402.

2007

Buchert, J., Selinheimo, E., Kruus, K., Mattinen, M.-L., Lantto, R. & Autio, K. 2007. Using cross-linking enzymes to improve textural and other properties of food. *In: Novel Enzyme Technology for Food Applications*. Rastall, R. (ed.). Woodhead, Cambridge, 2007.

Lantto, R., Puolanne, E., Katina, K., Niemistö, M., Buchert, J. & Autio, K. 2007. Effect of laccase and transglutaminase on the textural and water-binding properties of cooked chicken breast meat gels. *Eur. Food Res. Technol.* 225, 75-83.

Lantto, R., Puolanne, E., Kruus, K., Buchert, J. and Autio, K. 2007. Tyrosinase-aided protein cross-linking: Effects on gel formation of chicken breast myofibrils and texture and water-holding of chicken breast meat homogenate gels. *J. Agric. Food Chem.* 55, 1248-1255.

Selinheimo, E., Autio, K., Kruus, K. & Buchert, J. 2007. Elucidating the mechanism of laccase and tyrosinase in wheat bread making. *J. Agric. Food Chem.* 55, 6357-6365.

Selinheimo, E., NiEidhin, D., Steffensen, C., Nielsen, J., Lomascolo, A., Halaoui, S., Record, E., O'Beirne, D., Buchert, J. & Kruus, K. 2007. Comparison of the characteristics of fungal and plant tyrosinases. *J. Biotechnol.* 130, 471-480.

2006

Heiniö, R.-L. 2006. Sensory attributes of bakery products. *In: Bakery Products: Science and Technology*. Hui, Y.H. *et al.* (eds). Blackwell Publishing, Ames, Iowa, USA, 285-298.

Katina, K., Heiniö, R.-L., Autio, K. & Poutanen, K. 2006. Optimization of sourdough process for improved sensory profile and texture of wheat bread. *LWT-Food Sci. Technol.* 39, 1189-1202.

Lantto, R., Plathin, P., Niemistö, M., Buchert, J. & Autio, K. 2006. Effects of transglutaminase, tyrosinase and freeze-dried apple pomace powder on gel forming and structure of pork meat. *LWT-Food Sci. Technol.* 39, 1117-1124.

Liukkonen, K-H, Heiniö, RL, Salmenkallio-Marttila M, Autio K., Katina K and Poutanen K. 2006. Rye. In: *Bakery Products: Science and Technology*. Hui, Y.H., Corke, H., De Leyn, I., Nip, W.-K. & Cross, N. (eds.). Ames, Iowa: Blackwell Publishing, pp. 109-122.

Selinheimo, E., Saloheimo, M., Ahola, E., Westerholm-Parvinen, A., Kalkkinen, N., Buchert, J. & Kruus, K. 2006. Production and characterization of a secreted, C-terminally processed tyrosinase from the filamentous fungus *Trichoderma reesei*. *FEBS Journal* 273, 4322-4335.

Åström, A., Goldman, A. & Heiniö, R.-L. 2006. Workshop summary: Cross-cultural sensory and consumer studies. *Food Qual. Prefer.* 17, 646-647.

2005

Lantto, R., Puolanne, E., Kalkkinen, N., Buchert, J. & Autio, K. 2005. Enzyme-aided modification of chicken-breast myofibril proteins: effect of laccase and transglutaminase on gelation and thermal stability. *J. Agric. Food Chem.* 53, 9231-9237.

Partanen, R., Hakala, P., Sjövall, O., Kallio, H. & Forssell, P. 2005. Effect of relative humidity on the oxidative stability of microencapsulated sea buckthorn seed oil. *J. Food Sci.* 70, E37-E43.

2004

Heiniö, R.-L. 2004. Adding flavour to whole grain products. *New Food* 1/2004, 62-65.

Roininen, K., Fillion, L., Kilcast, D. & Lähteenmäki, L. 2004. Exploring difficult textural properties of fruit and vegetables for the elderly in Finland and the United Kingdom. *Food Qual. Prefer.* 15, 517-530.

Salmenkallio-Marttila, M., Heiniö, R.-L., Myllymäki, O., Lille, M., Autio, K., Poutanen, K. 2004. Relating microstructure, sensory and instrumental texture of processed oat. *Agr. Food Sci. Finland* 13, 124-137.

2003

Heiniö, R.-L., Katina, K., Wilhelmson, A., Myllymäki, O., Rajamäki, T., Latva-Kala, K., Liukkonen, K.-H. & Poutanen, K. 2003. Relationship between sensory perception and flavour-active volatile compounds of germinated, sourdough fermented and native rye following the extrusion process. *Lebensm.-Wiss. Technol.* 36, 533-545.

Heiniö, R.-L., Liukkonen, K.-H., Katina, K., Myllymäki, O., Poutanen, K. 2003. Milling fractionation of rye produces different sensory profiles of both flour and bread. *Food Sci. Technol.* 36, 577-583.

Kuuva, T., Lantto, R., Reinikainen, T., Buchert, J. & Autio, K. 2003. Rheological properties of laccase-induced sugar beet pectin gels. *Food Hydrocolloids* 17, 679-684.

Kälviäinen, N., Roininen, K. & Tuorila, H. 2003. The relative importance of texture, taste and aroma on a yogurt-type snack food preference in the young and the elderly. *Food Qual. Prefer.* 14, 177-186.

McEwan, J.A., Heiniö, R.-L., Hunter, E.A. & Lea, P. 2003. Proficiency testing for sensory ranking panels: measuring panel performance. *Food Qual. Prefer.* 14, 247-256.

2002

Forsell, P., Lahtinen, R., Lahelin, M. & Myllärinen, P. 2002. Oxygen permeability of amylose and amylopectin films. *Carbohydr. Polym.* 47, 125-129.

Heiniö, R.-L., Lehtinen, P., Oksman-Caldentey, K.-M. & Poutanen, K. 2002. Differences between sensory profiles and development of rancidity during long-term storage of native and processed oat. *Cereal Chem.* 79, 367-375.

Partanen, R., Ahro, M., Hakala, M., Kallio, H. & Forsell, P. 2002. Microencapsulation of caraway extract in beta-cyclodextrin and modified starches. *Eur. Food Res. Technol.* 214, 242-247.

Partanen, R., Yoshii, H., Kallio, H., Yang, B. & Forsell, P. 2002. Encapsulation of sea buckthorn kernel oil in modified starches. *J. Am. Oil Chem. Soc.* 79, 219-223.

Suutarinen, M., Honkapää, K., Heiniö, R.-L., Autio, K., Mustranta, A., Karppinen, S., Kiutamo, T., Liukkonen-Lilja, H. & Mokka, M. 2002. Effects of calcium chloride-based prefreezing treatments on the quality factors of strawberry jams. *Journal of Food Science* 67, 884-894.

Suutarinen, J., Honkapää, K., Heiniö, R.-L., Mustranta, A., Liukkonen-Lilja, H. & Mokka, M. 2002. Modeling of calcium chloride and pectin methylesterase prefreezing treatments of strawberries and jams. *Journal of Food Science* 67, 1240-1248.

2001

Heiniö, R.-L., Oksman-Caldentey, K.-M., Latva-Kala, K., Lehtinen, P. & Poutanen, K. 2001. Effect of drying treatment conditions on sensory profile of germinated oat. *Cereal Chem.* 78, 707-714.

2000

Suutarinen, M., Honkapää, K., Heiniö, R.-L., Autio, K. & Mokka, M. 2000. The effect of different prefreezing treatments on the structure of strawberries before and after jam making. *Lebensm.-Wiss. Technol.* 33, 188-201.

Doctoral theses

Heiniö, Raija-Liisa, Influence of processing on the flavour formation of oat and rye. VTT 2003. Pdf: <http://www.vtt.fi/inf/pdf/publications/2003/P494.pdf>.

Lantto, Raija, Protein cross-linking with oxidative enzymes and transglutaminase: Effects in meat protein systems. VTT 2007. Pdf: <http://www.vtt.fi/inf/pdf/publications/2007/P642.pdf>.

Partanen Riita, Mobility and oxidative stability in plasticised food matrices. The role of water. VTT 2008. Pdf: <http://www.vtt.fi/inf/pdf/publications/2008/P697.pdf>.

Selinheimo, E. tyrosinase and laccase as novel crosslinking tools for food biopolymers. VTT 2008. Pdf: <http://www.vtt.fi/inf/pdf/publications/2008/P693.pdf>.

Suutarinen, Marjaana. Effects of prefreezing treatments on the structure of strawberries and jams. VTT, 2002. Pdf: <http://www.vtt.fi/inf/pdf/publications/2002/P462.pdf>.

Posters

Autio, K., Lantto, R., Gerber, N. & Buchert, J. Crosslinking enzymes, novel biotools to tailor structure and improve stability.

Autio, K., Lantto, R., Reinikainen, T. & Buchert, J. Crosslinking enzymes, novel biotools for food structure engineering.

Autio, K., Liukkonen, K.-H. & Poutanen, K. Tailoring food structure for blood sugar control.

Ercili, D., Lantto, R. & Buchert, J. Laccase catalyzed modifications (cross-linking and fragmentation) of caseins.

Ercili, D., Lille, M., Buchert, J. & Lantto, R. Effects of laccase on structural properties of acidified Na-caseinate gels.

Ercili-Cura, D., Lille, M., Buchert, J. and Lantto, R. The effect of the crosslinking enzyme tyrosinase on the gel formation and texture of acid-induced milk gels.

Ercili-Cura, D., Lantto, R., Lille, M., Andberg, M., Kruus, K., and Buchert, J. Laccase-aided protein modification: Effects on the structural properties of acidified sodium caseinate gels.

Flander, L., Rouau, X., Morel, M.-H., Kruus, K., Buchert, J. & Autio, K. Effects of laccase and xylanase on wheat and oat doughs.

Flander, L. and Sontag-Strohm. Functional properties of albumins and globulins of oat.

Flander, L., Salmenkallio-Marttila, M., Suortti, T. & Autio, K. Effect of baking method on β -glucan properties of whole grain oat bread.

Forssell, P., Partanen, R., Boer, H., Pere, J. & Buchert, J. Better performance of Na-caseinate as an emulsifier by transglutaminase treatment?

Gilbert, C., Barylko-Pikielna, N., Heiniö, R.-L., Sinesio, F., Hegyi, A., Rodbotten, M., Sanchez, M. J., Henneberg, S. & Endrizzi I. Challenges in determining sensory panel proficiency in descriptive profiling.

Heiniö, R.-L., Åström, A., Jeppesen, L., Martinsdottir, E., Nilsen, A. N., Roininen, K. & Rodbotten, M. Diversity of typical foods in Nordic countries.

Heiniö, R.-L., Katina, K., Liukkonen, K.-H., Myllymäki, O., Åman, P., Adlercreutz, H. & Poutanen, K. Impact of peeling and rye bran fermentation on flavour and texture of high-fibre wheat breads.

Heiniö, R.-L., Lehtinen, P., Oksman-Caldentey, K.-M. & Poutanen, K. Increasing oat stability through germination and drying.

Heiniö, R.-L., Liukkonen, K.-H., Myllymäki, O., Pihlava, J.-M., Adlercreutz, H., Heinonen, S.-M. & Poutanen, K. Relation between flavour components and bioactive phenolic compounds in rye grain.

Heiniö, R.-L., Mustranta, A., Lähteenmäki, L., Poutanen, K. & Buchert, J. Effect of hydrolytic enzymes on the bitterness of rye flour.

Heiniö, R.-L., Mustranta, A., Lille, M., Lantto, R., Katina, K. & Lähteenmäki, L. Enzyme-aided modification of perceived flavour and texture of microwave-heated beefburgers.

Heiniö, R.-L., Oksman-Caldentey, K.-M., Latva-Kala, K. & Poutanen, K. Tuning the oat flavour by processing.

Heiniö, R.-L., Selinheimo, E., Lehtinen, P., Myllymäki, O., Pihlava, J.-M., Kaukovirta-Norja, A., Poutanen, K. & Buchert, J. (Bio)technological approach to understand the bitterness of whole grain rye.

Lantto, R., Kruus, K., Buchert, J. & Autio, K. Enzymes for meat protein engineering.

Lille, M., Autio, K. & Lantto, R. Tyrosinase-induced crosslinking of milk proteins.

Liukkonen, K.-H. & Autio, K. Particle size method to predict digestibility of breads.

Myllärinen, P., Kruus, K. & Autio, K. Acid-induced gelation of caseinate with transglutaminase.

Partanen, R., Buchert, J., Forssell, P., Raula, J. & Kauppinen, E. Effect of RH oxidative stability of spray-dried whey protein isolate-flaxseed oil emulsions.

Partanen, R., Buchert, J., Pere, J. & Forssell, P. Control of oxygen dynamics in whey protein isolate emulsions.

Partanen, R., Paananen, A., Forssell, P., Linder, M., Buchert, J. and Lantto, R. Effect of transglutaminase-induced cross-linking of sodium-caseinate on surface dilatational moduli and drainage and bubble coarsening in foams.

Roininen, K., Virtanen, H., Lille, M., Kaukovirta-Norja, A. & Buchert, J. Effect of high-pressure treatment on sensory and volatile profile of strawberry puree.

Salmenkallio-Marttila, M., Roininen, K., Lähteenmäki, L. & Autio, K. Does microstructure determine the sensory perception of bread?

Selinheimo, E., Autio, K., Kruus, K. & Buchert, J. Elucidating the mechanism of laccase and tyrosinase in wheat breadmaking.

Selinheimo, E., Flander, L., Kruus, K., Kaukovirta-Norja, A. & Buchert, J. Enzymatic processing as a tool to improve the quality of cereal products for people with celiac disease.

Selinheimo, E., Heiniö, R.-L., Lehtinen, P., Kaukovirta-Norja, A., Poutanen, K., and Buchert, J. Enzymes as a tool to characterise cereal flavour and chemistry.