

Figure S1. Experimental data and fitted model for the considered $\log_{10}D/T$ values.

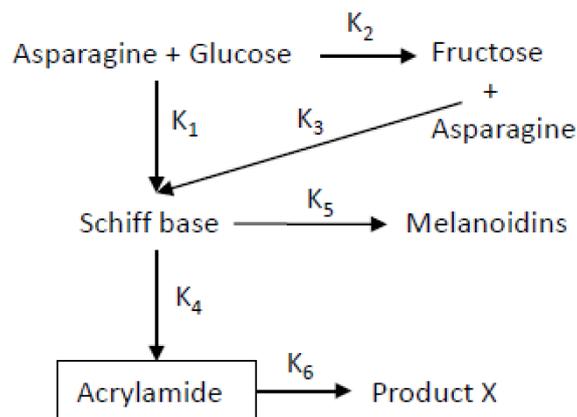


Figure S2. Kinetic model for acrylamide formation from glucose, fructose and asparagine proposed by Knol et al. 2005.

References

Knol, Jeroen J., Wil A.M. Van Loon, Jozef P.H. Linssen, Anne Laure Ruck, Martinus A.J.S. Van Boekel, and Alphons G.J. Voragen. 2005. "Toward a Kinetic Model for Acrylamide Formation in a Glucose-Asparagine Reaction System." *Journal of Agricultural and Food Chemistry* 53 (15): 6133–39. <https://doi.org/10.1021/jf050504m>.

Dynamics of microbial inactivation and acrylamide production in high temperature heat treatments.

Supplementary Material file 1: Calculation of initial concentrations of glucose, fructose and asparagine for pureed potato and prune juice.

The *red potato* variety is selected for the composition of the potato puree containing a significant quantity of glucose, asparagine and fructose of 16.94 *mmol/kg*, 57.65 *mmol/kg* and 11.34 *mmol/kg*, respectively and because it is the variety that produces the highest amount of acrylamide (Vivanti et al., 2006). If the density of the potato puree is considered to be 634.01 *g/l* (Ilhamto et al., 2014) then initial

concentration of glucose is $C_{0,glucose} = 16.94 \frac{mmol}{kg} \cdot 0.63401 \frac{kg}{l} = 10.740 mM$, initial

concentration of asparagine is $C_{0,asparagine} = 57.65 \frac{mmol}{kg} \cdot 0.63401 \frac{kg}{l} = 36.551 mM$

and initial concentration of fructose is $C_{0,fructose} = 11.34 \frac{mmol}{kg} \cdot 0.63401 \frac{kg}{l} =$

7.190 *mM* and .

On the other hand, in the case of prune juice, the amount of glucose, asparagine and fructose are, respectively 50 *mg/g*, 1.5 *mg/g* and 50 *mg/g*, with a density of 0.769 *g/ml* (Becalski et al., 2011). Since the molecular weights of glucose, asparagine

and fructose are 180.156 *g/mol*, 132.12 *g/mol* and 180.16 *g/mol* respectively, initial

concentration of glucose is $C_{0,glucose} = 50 \frac{mg}{g} \cdot 0.769 \frac{g}{ml} \cdot \frac{1}{180.156} \frac{mol}{mg} \cdot 10^3 \frac{ml}{l} =$

213.426 *mM*, initial concentration of asparagine is $C_{0,asparagine} = 1.5 \frac{mg}{g} \cdot$

$0.769 \frac{g}{ml} \cdot \frac{1}{132.12} \frac{mol}{mg} \cdot 10^3 \frac{ml}{l} = 8.731 mM$ and initial concentration of fructose is

$C_{0,fructose} = 50 \frac{mg}{g} \cdot 0.769 \frac{g}{ml} \cdot \frac{1}{180.16} \frac{mol}{mg} \cdot 10^3 \frac{ml}{l} = 213.421 mM$.

References

- Becalski, A., Brady, B., Feng, S., Gauthier, B. R., & Zhao, T. (2011). Formation of acrylamide at temperatures lower than 100°C: The case of prunes and a model study. *Food Additives and Contaminants - Part A Chemistry, Analysis, Control, Exposure and Risk Assessment*, 28(6), 726–730.
<https://doi.org/10.1080/19440049.2010.535217>
- Ilhamto, N., Keller, H. H., & Duizer, L. M. (2014). The Effect of Varying Ingredient Composition on the Sensory and Nutritional Properties of a Pureed Meat and Vegetable. *Journal of Nutrition in Gerontology and Geriatrics*, 33(3), 229–248.
<https://doi.org/10.1080/21551197.2014.927307>
- Vivanti, V., Finotti, E., & Friedman, M. (2006). Level of Acrylamide Precursors Asparagine, Fructose, Glucose, and Sucrose in Potatoes Sold at Retail in Italy and in the United States. *Journal of Food Science*, 71(2), C81–C85.
<https://doi.org/10.1111/j.1365-2621.2006.tb08886.x>