**Supplementary Information for**

Sodium Ions Affect Pyrraline Formation in the Maillard Reaction with Lys-Containing Dipeptides and Tripeptides

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Table S1. Pyrraline formation from different peptides with glucose at different sodium ion concentrations

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Concentration of sodium ion in the mixtures (mol/L) | Pyrraline concentration (mmol/mol lysine) | | | | | |
| Lys-Gly+glucose | Lys-Ala+glucose | Lys-Phe+glucose | Lys-Gly-Gly+glucose | Lys-Gly-Ala+glucose | Lys-Gly-Phe+glucose |
| 0.0 | 0.058 ± 0.007 aa | 0.063 ± 0.008 aa | 0.065 ± 0.016 aa | 0.058 ± 0.030 aa | 0.064 ± 0.019 aa | 0.062 ± 0.010 aa |
| 0.1 | 0.161 ± 0.009 b | 0.256 ± 0.014 ab | 3.357 ± 0.026 bb | 0.134 ± 0.026 cb | 0.218 ± 0.017 db | 2.442 ± 0.010 eb |
| 0.2 | 0.369 ± 0.012 c | 0.752 ± 0.028 ac | 4.529 ± 0.027 bc | 0.323 ± 0.029 cc | 0.475 ± 0.025 dc | 3.668 ± 0.035 ec |
| 0.3 | 0.323 ± 0.012 d | 0.695 ± 0.001 ad | 4.252 ± 0.117 bd | 0.273 ± 0.015 cd | 0.454 ± 0.008 dd | 3.499 ± 0.019 ed |
| 0.4 | 0.265 ± 0.004 e | 0.568 ± 0.047 ae | 3.699 ± 0.048 be | 0.245 ± 0.013 ce | 0.406 ± 0.004 de | 3.002 ± 0.061 ee |
| 0.5 | 0.212 ± 0.006 f | 0.285 ± 0.013 af | 3.361 ± 0.053 bf | 0.212 ± 0.004 cf | 0.365 ± 0.017 df | 2.703 ± 0.086 ef |

Those means in the same vertical column or horizontal row marked with the same superscript letter are not significantly different at the 0.05 level.

Table S2. 3-deoxyglucosone formation in the Maillard reaction between different peptides and glucose at different sodium ion concentrations

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Concentration of sodium ion in the mixtures (mol/L) | 3-deoxyglucosone concentration (mmol/mol glucose) | | | | | |
| Lys-Gly+glucose | Lys-Ala+glucose | Lys-Phe+glucose | Lys-Gly-Gly+glucose | Lys-Gly-Ala+glucose | Lys-Gly-Phe+glucose |
| 0.0 | 0.055 ± 0.006 aa | 0.038 ± 0.021 aa | 0.055 ± 0.011 aa | 0.035 ± 0.010 aa | 0.045 ± 0.015 aa | 0.060 ± 0.016 aa |
| 0.1 | 1.405 ± 0.251 b | 2.723 ± 0.028 ab | 5.365 ± 0.010 bb | 1.232 ± 0.181 cb | 2.155 ± 0.035 db | 4.492 ± 0.236 eb |
| 0.2 | 3.189 ± 0.072 c | 3.895 ± 0.063 ac | 7.889 ± 0.039 bc | 2.378 ± 0.054 cc | 3.546 ± 0.016 dc | 6.784 ± 0.075 ec |
| 0.3 | 2.812 ± 0.066 d | 3.689 ± 0.079 ad | 7.344 ± 0.022 bd | 2.187 ± 0.063 cd | 3.183 ± 0.019 dd | 6.303 ± 0.050 ed |
| 0.4 | 2.510 ± 0.074 e | 3.280 ± 0.045 ae | 7.037 ± 0.054 be | 1.891 ± 0.068 ce | 2.898 ± 0.055 de | 5.864 ± 0.025 ee |
| 0.5 | 2.107 ± 0.063 f | 2.815 ± 0.061 af | 6.771 ± 0.051 bf | 1.627 ± 0.006 cf | 2.660 ± 0.022 df | 5.614 ± 0.040 ef |

Those means in the same vertical column or horizontal row marked with the same superscript letter are not significantly different at the 0.05 level.

Table S3. Peptide consumption in the Maillard reaction between different peptides and glucose at different sodium ion concentrations

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Concentration of sodium ion in the mixtures (mol/L) | Peptide loss (%) | | | | | |
| Lys-Gly+glucose | Lys-Ala+glucose | Lys-Phe+glucose | Lys-Gly-Gly+glucose | Lys-Gly-Ala+glucose | Lys-Gly-Phe+glucose |
| 0.0 | 5.38 ± 0.49 aa | 5.95 ± 0.15 aa | 6.05 ± 0.50 aa | 5.87 ± 0.59 aa | 5.36 ± 0.52 aa | 6.74 ± 0.24 ea |
| 0.1 | 13.15 ± 0.22 b | 19.76 ± 0.52 ab | 49.04 ± 1.03 bb | 65.21 ± 0.10 cb | 67.36 ± 0.40 db | 76.24 ± 0.50 eb |
| 0.2 | 20.61 ± 0.35 c | 25.35 ± 0.60 ac | 71.13 ± 1.52 bc | 77.46 ± 0.35 cc | 82.17 ± 0.35 dc | 95.89 ± 0.50 ec |
| 0.3 | 21.99 ± 0.43 c | 25.09 ± 0.47 ac | 72.44 ± 1.26 bc | 77.39 ± 0.22 cc | 82.53 ± 1.54 dc | 97.08 ± 0.99 ed |
| 0.4 | 22.98 ± 0.71 c | 25.12 ± 0.49 ac | 72.71 ± 1.56 bc | 78.73 ± 0.73 cc | 82.58 ± 0.33 dc | 96.85 ± 0.59 ed |
| 0.5 | 23.01 ± 0.68 c | 25.58 ± 0.20 ac | 72.09 ± 0.10 bc | 79.32 ± 0.79 cc | 82.98 ± 0.59 dc | 96.69 ± 0.73 ed |

Those means in the same vertical column or horizontal row marked with the same superscript letter are not significantly different at the 0.05 level.