coatings

Supporting Information

Acrylamide analysis: improvement of the chromatographic conditions, and recovery. Acrylamide detection was performed by HPLC at 210 nm, by using the following columns: (a) Alltima HP C18 stationary phase, 5 µm particle diameter, 4.6 × 250 mm internal diameter and length (GRACE/Alltech, Maryland USA); (b) Reprosil100 C18 stationary phase, 5 µm particle diameter, 4.6 × 250 mm internal diameter and length (Dr. Maisch GmbH, Ammerbuch, Germany); (c) Synergi™Max-RPC18 stationary phase (Phenomenex, Torrance, CA USA), 4 µm particle diameter, 4.6 × 250 mm internal diameter and length; (d) Phenomenex Synergi™ Hydro-RP 80 Å C18 stationary phase (Phenomenex, Torrance, CA USA), 4 µm particle diameter, 4.6 × 250 mm internal diameter and length. All these columns allowed the separation of acrylamide by using an isocratic and/or gradient program of elution. Three different mobile phases were tested by changing the water/acetonitrile ratio: 90/10, 95/5, 97/3 *v*/*v* (all containing 0.1% *v*/*v* formic acid). In all cases, the mobile phase was used with the following flow rates: 0.50, 1.00 mL/min. The best performances were obtained using the Synergi 4 µm Hydro-RP 80 Å column, 4.6 × 250 mm, with water/acetonitrile (97/3 *v*/*v* containing 0.1% *v*/*v* formic acid), according to the method already described by Michalak et al. [43] with some modifications. In these conditions, the best chromatographic separation was achieved with the elution of acrylamide at about 4.9 min with at flow rate of 1.00 mL/min and UV detection at 210 nm (Figures S1–S3).

Calibration curves were obtained by plotting the peak area of acrylamide versus the concentration of acrylamide (range of concentration: 0.1–5 mg/mL). The equation was obtained by applying the linear regression was $y = 108.53x - 1.6965$, with a R^2 equals to 0.999; this equation was used to calculate the amount of acrylamide in all samples analyzed. In addition, the recovery test was performed to assess the extraction efficiency for each sample; to this aim, the acrylamide content before and after the addition of 500 µg/kg of acrylamide standard was determined. Percentage recovery was determined according to the following formula:

$$\text{Recovery (\%)} = \frac{\text{Acrylamide (detected after standard addition)} - \text{acrylamide (sample)}}{\text{acrylamide (standard added)}} \times 100 \quad (1)$$

Acrylamide determinations were repeated three times and results are reported as the means with standard deviations. The results of recovery studies are shown in Table S1. The recovery values were in the range of 86%–106%, which were statistically in line with the experimental deviations.

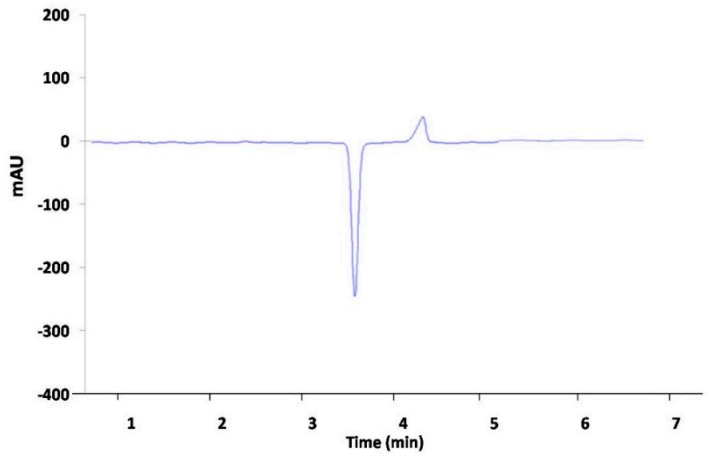

Figure S1. HPLC chromatograms of water as blank obtained at 210 nm. The mobile phase was (97/3 *v*/*v*) water/acetonitrile containing 0.1% *v*/*v* formic acid at 1.00 mL/min.

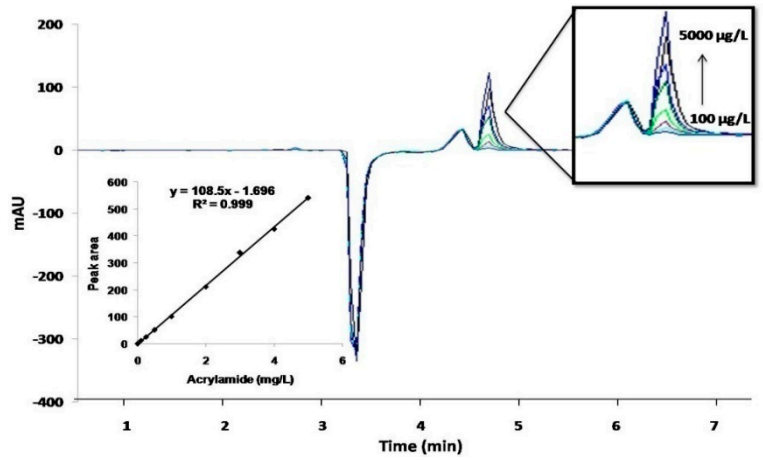

Figure S2. HPLC chromatograms of acrylamide standards obtained at 210 nm; acrylamide concentrations were 0.1, 0.25, 0.5, 1, 2, 3, 4, and 5 mg/L of acrylamide. The mobile phase was (97/3 *v*/*v*) water/acetonitrile containing 0.1% *v*/*v* formic acid at 1.00 mL/min.

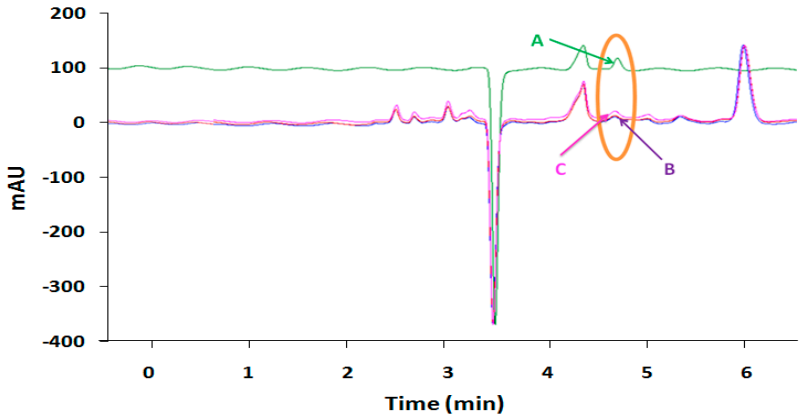

Figure S3. HPLC chromatograms were: A, (green line) 1000 µg/L acrylamide standard; B (violet line) acrylamide extracted from the French fry potato sample; and C (pink line) acrylamide from the French fry potato sample into which 500 µg/kg acrylamide standard was added and in the sample were eluted in the best chromatographic conditions by using mobile phasewater/acetonitrile (97/3 *v*/*v*) containing 0.1% *v*/*v* formic acid at 1.00 mL/min, and UV detection at 210 nm.

Table S1. Recovery test for acrylamide in all samples (in each sample 500 µg/kg of standard were added) *.

Sample	Sample Content Acrylamide (µg/kg)	Acrylamide Content in Spiked Sample (µg/kg)	Recovery (%)
Control	2089.4 ± 36.5 [a]	2618.4 ± 10.7 [a]	105.8 ± 2.1
GPF	1435.1± 27.6 [b]	1911.4 ± 25.3 [b]	95.2 ± 5.0
GPF + TGase	1321.0 ± 20.3 [c]	1766.3 ± 13.0 [c]	89.0 ± 2.6
CH	1292.5 ± 26.1 [c]	1722.8 ± 11.0 [c]	86.0 ± 2.2
PEC	1085.5 ± 38.0 [d]	1548.3 ± 17.5 [d]	92.5 ± 3.5

*: Means that do not share a letter ([a–d]) are significantly different (Tukey means comparison, $p < 0.05$).