

Supporting Information

Biochip Spray: Simplified Coupling of Surface Plasmon

Resonance Biosensing and Mass Spectrometry

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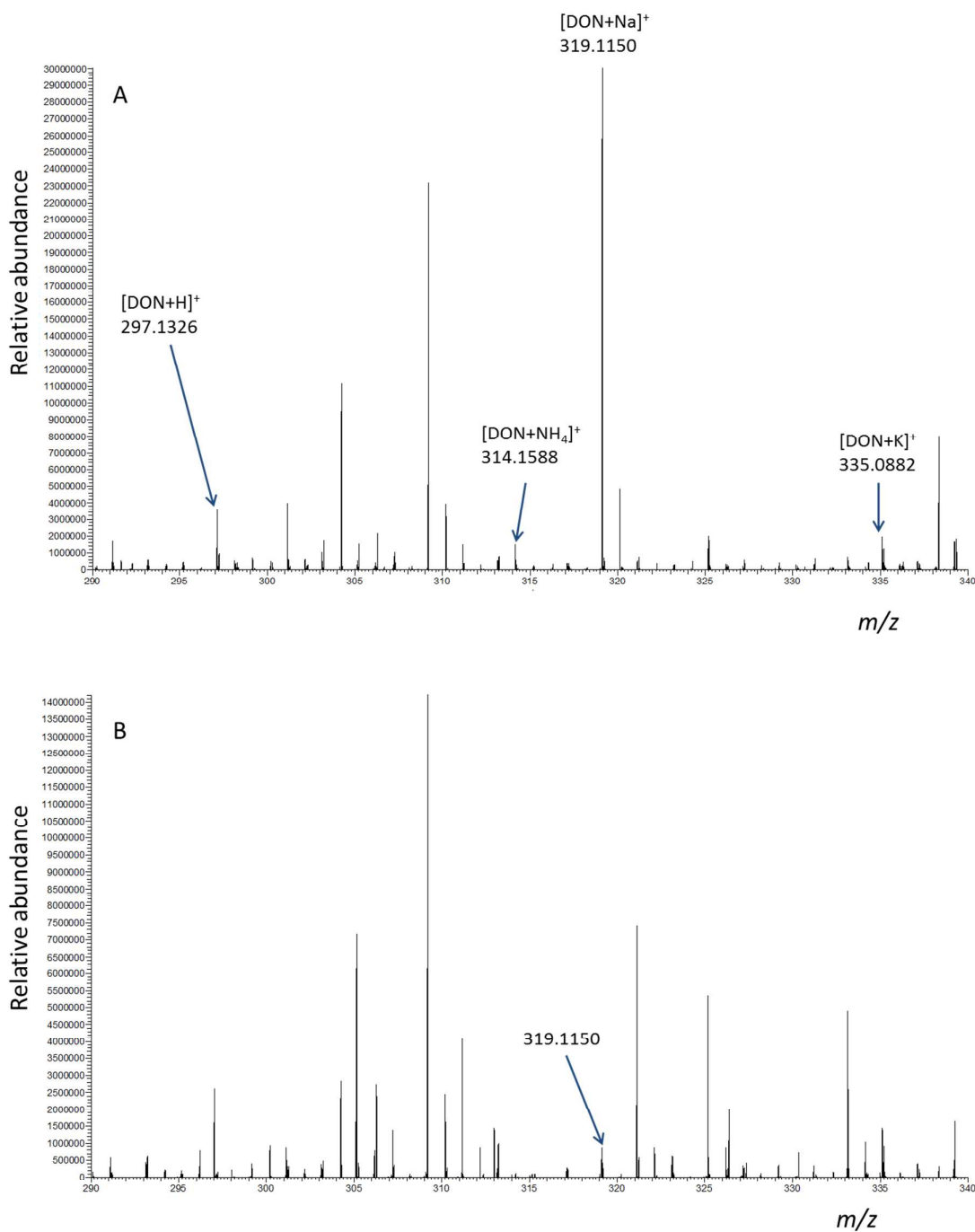


Figure S1. Chip Spray mass spectra recorded in positive ion mode from a CMD-modified gold chip spiked with A) 5 μ L of 1 μ g/mL DON in methanol and B) 5 μ L of methanol, drying, and application of 5 μ L of methanol and 5 kV. In blank methanol an unknown species with m/z 319.1150, i.e., the same m/z as for $[DON+Na]^+$ was observed.

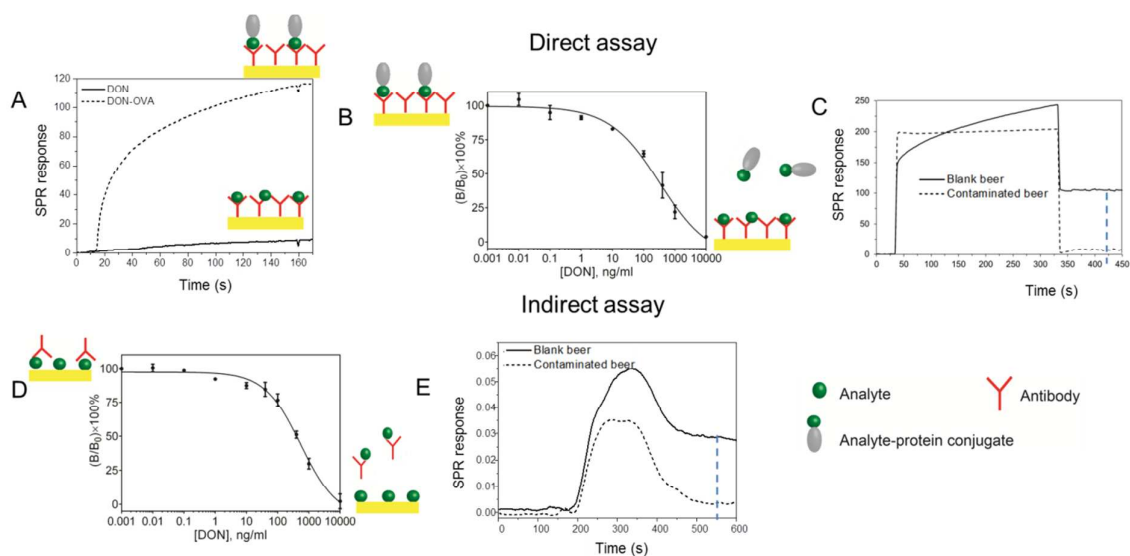


Figure S2. Different SPR assay modes. In a direct SPR assay, anti-DON is immobilized on the surface. The response obtained only for DON was weak (A, solid line, Biacore) or absent (iSPR) thus requiring use of an ovalbumin conjugate of DON (DON-OVA) as a signal enhancer (A, dashed line). B) The response of a fixed concentration of DON-OVA in competition with increasing concentration of DON (in sample) for the immobilized anti-DON is measured to construct a calibration curve. C) SPR response measured for blank beer and contaminated beer using the direct assay of B with DON-OVA as signal enhancer.

In an indirect SPR assay, DON is immobilized on the surface and the response of a fixed concentration of anti-DON with increasing concentrations of DON (in sample) in competition with the immobilized DON is measured (D). E) SPR response measured for blank beer and contaminated beer using the indirect assay of D.

A near-complete inhibition of the SPR response (taken at time points indicated by blue dashed lines in Figure S2C and E) is seen for the contaminated beer, indicating the presence of DON and/or cross-reacting conjugates. Note: the indirect assay is recommended for routine screening of large numbers of samples as the chips with immobilized DON are much more durable than the ones with immobilized antibodies (see also ref. 29 cited in the main text).

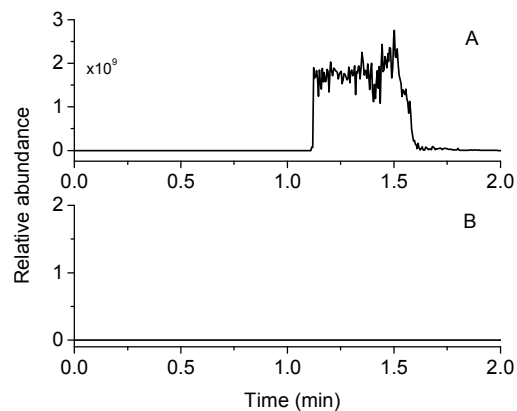


Figure S3. A) Total ion chromatogram and B) extracted ion chromatogram for m/z 297.1333 ($[\text{DON}+\text{H}]^+$). Conditions: results obtained from a CMD-modified gold chip with immobilized anti-FB₁ that was flushed in the flow cell of the iSPR with spiked beer (containing 10 $\mu\text{g}/\text{mL}$ of DON), followed by washing of the anti-FB₁ chip with buffer and water and transfer of the chip to the Biochip Spray MS set-up.

