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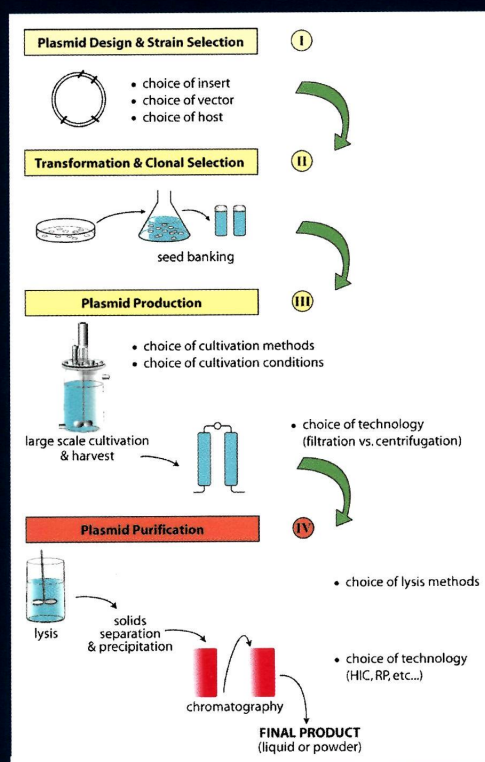
Review Article

Current trends in separation of plasmid DNA vaccines:
A review

Ashraf Ghanem, Robert Healey and Frady G. Adly

(Published on pp. 1–15 of this issue)

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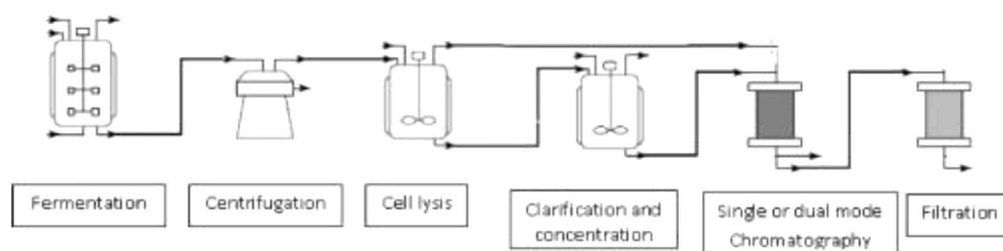
Editorial Board

Page iii

Review article

2

Current trends in separation of plasmid DNA vaccines: A review
Review Article
Pages 1-15
Ashraf Ghanem, Robert Healey, Frady G. Adly

Graphical abstract

| Fermentation | Centrifugation | Cell lysis | Clarification and concentration | Single or dual mode Chromatography | Filtration |

Highlights

► Current trends in the separation and purification of Plasmid DNA vaccines. ► Practical large and analytical scale productions of the plasmid DNA vaccine are discussed. ► Separation challenges. ► New developments and process solutions. ► Future prospective in the field of plasmid DNA vaccines.

Chemometrics

3

Quantitative analysis of the effect of zidovudine, efavirenz, and ritonavir on insulin aggregation by multivariate curve resolution alternating least squares of infrared spectra
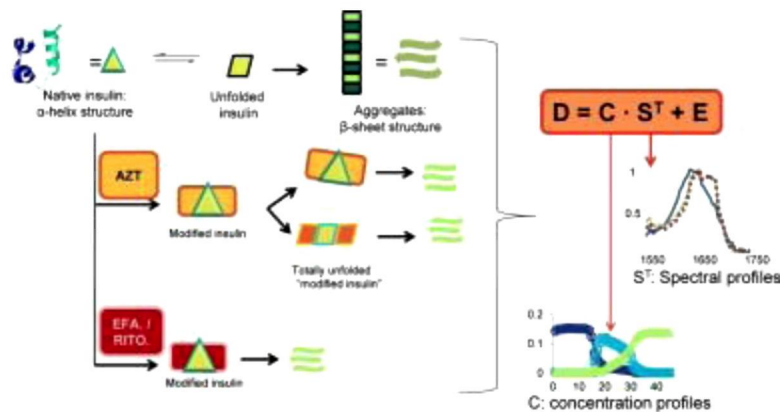Original Research Article
Pages 16-24
Idoia Martí-Aluja, Itziar Ruisánchez, M. Soledad Larrechi

Graphical abstract

Highlights

► The structure of insulin can be changed via interaction with antiretroviral drugs. ► The chemical interaction promotes the formation of aggregates. ► This drug effect was evaluated by MCR-ALS coupled to IR spectroscopy. ► Formation of aggregates was favourable if drugs were able to form hydrogen bonds. ► Higher drug concentrations favoured formation of amorphous aggregates.
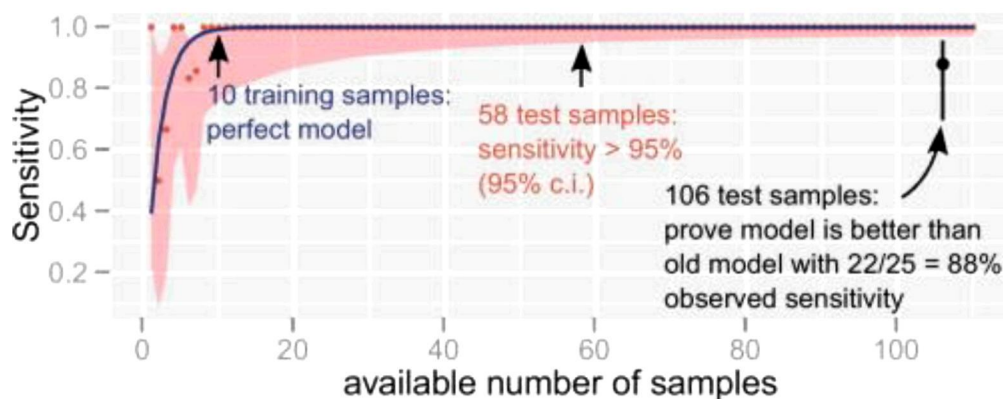
4⌐

Sample size planning for classification models
Original Research Article
Pages 25-33
Claudia Beleites, Ute Neugebauer, Thomas Bocklitz, Christoph Krafft, Jürgen Popp

Graphical abstract

Highlights

► We compare sample size requirements for classifier training and testing. ► Number of training samples: determine from learning curve. ► Test sample size: specify confidence interval width or model

to compare to. ► Classifier testing needs far more samples than training. ► Start with at least 75 cases per class, then refine sample size planning.
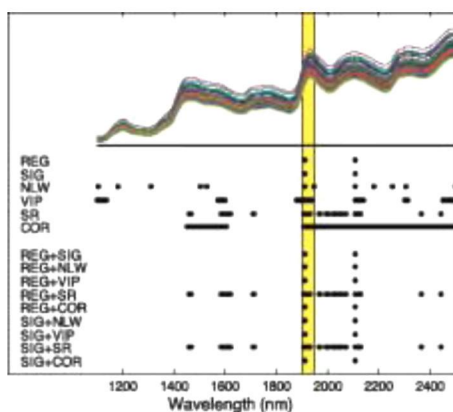
5☐

Predictive-property-ranked variable reduction in partial least squares modelling with final complexity adapted models: Comparison of properties for ranking
Original Research Article
Pages 34-45
Jan P.M. Andries, Yvan Vander Heyden, Lutgarde M.C. Buydens

Graphical abstract

Highlights

► Variable reduction using the PPRVR-FCAM method is investigated. ► Performance of individual and combined predictor-variable properties is studied. ► Selective and predictive performances of resulting models statistically compared. ► Absolute PLS1 regression coefficient and its significance are most effective.
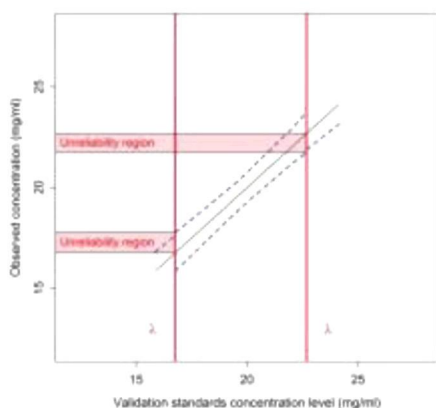
6☐

Methodology for the validation of analytical methods involved in uniformity of dosage units tests
Original Research Article
Pages 46-52
E. Rozet, E. Ziemons, R.D. Marini, B. Boulanger, Ph. Hubert

Graphical abstract

Highlights

► Methodology to validate methods for uniformity of dosage units tests. ► Valid methods will ensure to make the correct decisions with high probability. ► A Quality by Design compliant validation methodology for UDU assays. ► Analytical Target Profile is defined for UDU assays. ► Application to the validation of an HPLC-UV and NIRS method.
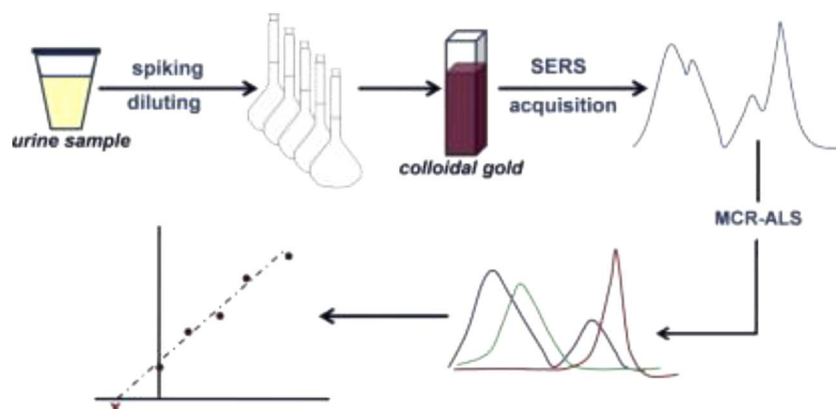
7 ⌐

Standard addition method applied to the urinary quantification of nicotine in the presence of cotinine and anabasine using surface enhanced Raman spectroscopy and multivariate curve resolution
Original Research Article
Pages 53-59
Mónica B. Mamián-López, Ronei J. Poppi

Graphical abstract

Highlights

► Determination of urinary nicotine in the presence of cotinine and anabasine. ► Surface enhanced Raman spectroscopy for analysis of nicotine. ► Multivariate curve resolution in conjunction with standard addition method. ► Determination of nicotine was accomplished with error values less than 10%.

Extraction and Sample Handling

8

An absorbing microwave micro-solid-phase extraction device used in non-polar solvent microwave-assisted extraction for the determination of organophosphorus pesticides
Original Research Article
Pages 60-68
Ziming Wang, Xin Zhao, Xu Xu, Lijie Wu, Rui Su, Yajing Zhao, Chengfei Jiang, Hanqi Zhang, Qiang Ma, Chunmei Lu, Deming Dong

Graphical abstract
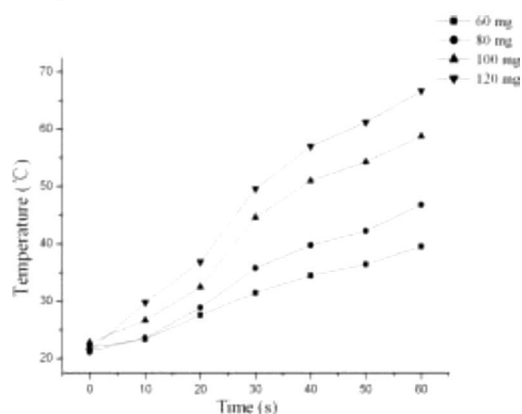
Highlights

► An absorbing microwave μ-SPE device packed with activated carbon was used. ► Absorbing microwave μ-SPE device was made and used to enrich the analytes. ► Absorbing microwave μ-SPE device was made and used to heat samples directly. ► MAE-μ-SPE was applied to the extraction of OPPs with non-polar solvent only.

Sensors and Bioselective Reagents
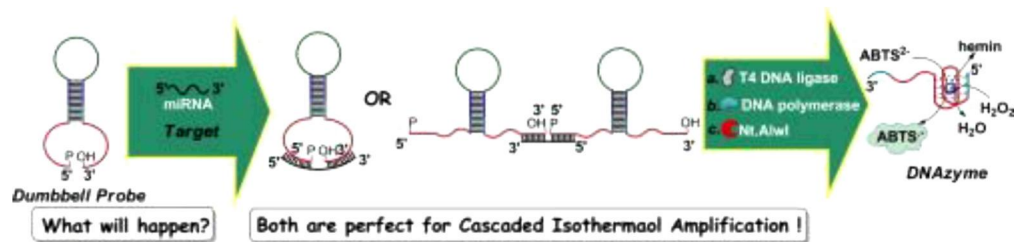
9

Dumbbell probe-mediated cascade isothermal amplification: A novel strategy for label-free detection of microRNAs and its application to real sample assay
Original Research Article
Pages 69-74

Sai Bi, Yangyang Cui, Li Li

Graphical abstract

Highlights

► This assay relies on the circularization of dumbbell probe by target microRNA. ► Rolling circle amplification and autonomous DNA machine are then occurred. ► G-quadruplex is continuously produced to bind hemin to generate color signal. ► High sensitivity, wide dynamic range, and good specificity is achieved.
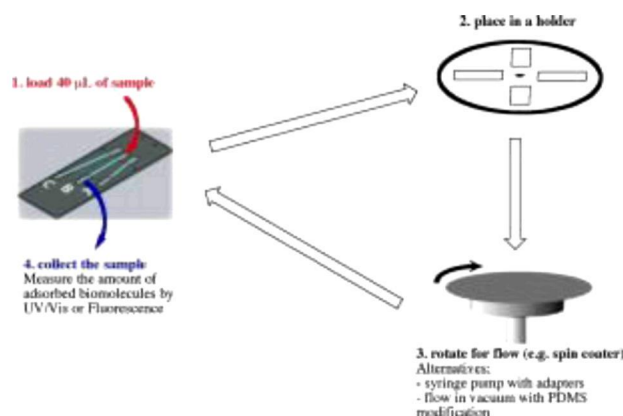
Graphical abstract

Highlights

► A simple tool to assess biomolecule adsorption onto the surfaces of microchannels. ► Development for dilution by surface-adsorption based depletion of protein samples. ► It can easily be done using a

readily available apparatus like a spin-coater. ► The assessment tool is facile and quantitative. ► Straightforward comparison of different surface chemistries.
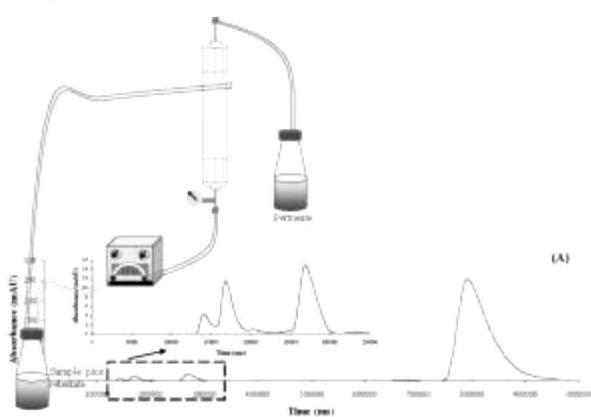
Separation Methods

11 ┌
Size exclusion and anion exchange high performance liquid chromatography for characterizing metals bound to marine dissolved organic matter
Original Research Article
Pages 83-92
Natalia García-Otero, Pilar Bermejo-Barrera, Antonio Moreda-Piñeiro

Graphical abstract

Highlights

► Fractionation methods for assessing metals bound to marine DOM were developed. ► SEC and AEC with UV detection and hyphenated with inductively coupled plasma-mass spectrometry were used. ► SEC-UV showed marine DOM of molecular weights from 16 to 1 kDa. ► Cobalt, manganese, strontium and zinc are bound to marine DOM.

12 ┌
Simultaneous determination of 3-monochloropropane-1,2-diol and acrylamide in food by gas chromatography-triple quadrupole mass spectrometry with coupled column separation
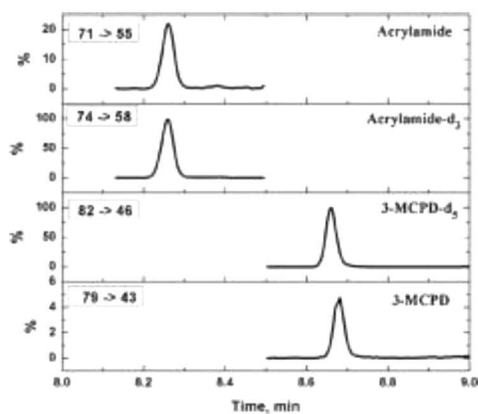Original Research Article
Pages 93-99
Xiao-min Xu, Hua-li He, Yan Zhu, Liang Feng, Ying Ying, Bai-fen Huang, Hai-tao Shen, Jian-long Han, Yi-ping Ren

Graphical abstract

Highlights

► 3-MCPD and acrylamide were simultaneously detected by GC–MS/MS. ► A coupled column was applied to get sharp and symmetrical peaks. ► MS/MS in MRM was used to suppress matrix interferences and obtain high sensitivity. ► The method was successfully applied to different sample matrices.

Erratum

13☐

Corrigendum to "Miniaturized nucleic acid amplification systems for rapid and point-of-care diagnostics: A review" [Anal. Chim. Acta 733 (2012) 1–15]

Page 100
Farhan Ahmad, Syed A. Hashsham