

API 2000 文献总结

1. *Journal of Chromatography A*, 957 (2002) 27–36

Analysis of polar pesticides in rainwater in Denmark by liquid chromatography – tandem mass spectrometry

液相色谱串联质谱法分析丹麦雨水中的极性杀虫剂（环境分析）

注：53 中杀虫剂的分析，文章非常有用，列出了各种杀虫剂的正负离子模式以及最低检测限，例如 2,4-滴丙酸，其 LOD 为 0.003ug/l（也就是 3pg/ml）

2. *Journal of Chromatography A*, 995 (2003) 239–243

Determination of aromatic amine mutagens, PBTA-1 and PBTA-2, in river water by solid-phase extraction followed by liquid chromatography – tandem mass spectrometry

固相萃取液相色谱串联质谱法分析河水中芳胺类致突变物质：PBTA-1 和 PBTA-2（苯并三唑类化合物）

注：PBTA-1 和 PBTA-2 的 LOD 分别为 1 和 2 ng/l（pg/ml）

3. *Journal of Chromatography A*, 960 (2002) 109–119

Trace determination of priority pesticides in water by means of high-speed on-line solid-phase extraction–liquid chromatography–tandem mass spectrometry using turbulent-flow chromatography columns for enrichment and a short monolithic column for fast liquid chromatographic separation

高速在线固相萃取-液相色谱串联质谱法测定水中微量极性杀虫剂

注：11 中杀虫剂检测(酚、嘧和有有机磷类),LOD 从 0.4pg/ml 到 13 pg/ml 不等

4. *Rapid Commun. Mass Spectrom.* 2004; 18: 2443–2450

A multi-residue screening method for the determination of 73 pesticides and metabolites in fruit and vegetables using high-performance liquid chromatography/tandem mass spectrometry

采用液相色谱串联质谱对蔬菜及水果中 73 种杀虫剂及代谢物的多组分残留分析

注：定量下限为 0.01-0.1mg/kg（ppm）不等

5. *Rapid Commun. Mass Spectrom.* 2004; 18: 1553–1560

Electrospray ionization mass spectrometric characterization and quantitation of xanthine derivatives using isotopically labelled analogues: an application for equine doping control analysis
采用同位素标记法研究黄嘌呤衍生物的 ESI 特征及定量：一个马的添加剂控制分析应用

注：赛马兴奋剂；可可碱定量下限为 0.4 ug/ml

6. *Biomed. Chromatogr.* 15: 393–402 (2001)

High speed determination of beta-receptor blocking agents in human urine by liquid chromatography/tandem mass spectrometry

采用液相色谱串联质谱高速测定人尿样中的 b-受体拮抗剂

注：奥运会兴奋剂；32 种兴奋剂，APCI,监测浓度大多数为 10ng/ml

7. *Journal of Chromatography B*, 768 (2002) 223–229

Sensitive liquid chromatography – tandem mass spectrometry method for the determination of clarithromycin in human plasma

灵敏的液相色谱串联质谱法测定人血浆中克拉霉素

注：ESI, 2.5 分钟内出峰，每天可分析 230 个样品，定量下限 2.95ng/ml，血浆用量 0.3ml。

8. *Rapid Commun. Mass Spectrom.* 2003; 17: 788–793

Rapid determination of orotic acid in urine by a fast liquid chromatography/tandem mass spectrometric method

液相色谱串联质谱快速测定尿液中的乳清酸

注：可用于诊断某些遗传性疾病，例如尿素循环失常和乳清酸尿；0.5 - 5.0nmol/ml

9. J. Mass Spectrom. 2003; 38: 1197-1206

Liquid chromatography/electrospray ionization tandem mass spectrometric screening and confirmation methods for b2-agonists in human or equine urine

采用电喷雾液相色谱串联质谱法监测人尿及马尿中 b2-兴奋剂

注：19 种 b2-兴奋剂的裂解规律分析及其在人尿和马尿中的定量，定量下限为 2.0ng/ml

10. Rapid Commun. Mass Spectrom. 2003; 17: 135-139

Quantitative analysis of clindamycin in human plasma by liquid chromatography/electrospray ionisation tandem mass spectrometry using d1-N-ethylclindamycin as internal standard

以 d1-氮-乙基克林霉素为内标采用电喷雾液相色谱串联质谱定量分析人血浆中的克林霉素

注：ESI；克林霉素 0.05 - 3.2 mg/mL

11. Rapid Commun. Mass Spectrom. 2002; 16: 134-141

Determination of phenoxyacid herbicides and their phenolic metabolites in surface and drinking water

测定地面水及饮用水中卤代苯氧型除草剂及其苯酚代谢物

注：ESI；卤代苯氧型除草剂最低检测限低于 0.1pg/ml；代谢物的最低检测限为 5-10 pg/ml 不等

12. Rapid Commun. Mass Spectrom. 2003; 17: 1157-1162

Simultaneous quantitation of enalapril and enalaprilat in human plasma by 96-well solid-phase extraction and liquid chromatography/tandem mass spectrometry

液相色谱串联质谱及 96 孔固相萃取技术同时定量分析人血浆中的依那普利及依那普利拉

注：依那普利及依那普利拉定量范围分别为 0.2 - 200 and 1.0 - 100 ng/ml

API 3000 文献总结

1. J Occup Health 2004; 46;49-59

Perfluorooctanoate and perfluorooctane Sulfonate Concentrations in Surface Water in Japan

日本地表水中全氟辛酸盐（PFOA）及全氟辛烷磺酸盐（PFOS）浓度测定

注：全氟辛酸盐（PFOA）及全氟辛烷磺酸盐（PFOS）为合成的表面活性剂，可导致前列腺癌，本文 PFOA 及 PFOS 的最低检测限分别为 0.06 和 0.04ng/L，最低定量限为 0.1ng/L

2. Rapid Commun. Mass Spectrom. 2003; 17: 519-525

Simple and sensitive liquid chromatography/tandem mass spectrometry method for the determination of diazepam and its major metabolites in rat cerebrospinal fluid

灵敏、简单的液相色谱串联质谱法测定鼠脑脊液中安定及其代谢物

注：4 种化合物同时测定，分析时间小于 3min,取样量仅为 25ml，线性范围分别为 0.04 - 200 ng/mL （安定） 0.1 - 200 ng/ml(安定的三种代谢物)

3. Analytical Chemistry. PAGE EST: 8.5 A-I

Determination of Saikosaponin Derivatives in Radix bupleuri and in Pharmaceuticals of the Chinese Multiherb Remedy Xiaochaihu-tang Using Liquid Chromatographic Tandem Mass Spectrometry

采用液相色谱串联质谱法测定中药柴胡根及复方中药汤剂小柴胡汤中的柴胡皂甙衍生物

注：负离子检测，15 种柴胡皂甙衍生物的同时测定，线性范围为 1.65 或 4.98 - 1200 ng/mL

4. Rapid Commun. Mass Spectrom. 2002; 16: 1844-1850

Liquid chromatograph/tandem mass spectrometry for the determination of fluoxetine and its main

active metabolite norfluoxetine in human plasma with deuterated fluoxetine as internal standard
以氘代氟西汀为内标采用液相色谱串联质谱法测定人血浆中氟西汀及其主要活性代谢物去氟西汀

注：血浆用量 200ml，线性范围 0.27-22ng/ml

5. *Rapid Commun. Mass Spectrom.* 2003; 17: 171–175

Analysis of isomeric long-chain hydroxy fatty acids by tandem mass spectrometry: application to the diagnosis of long-chain 3-hydroxyacyl CoA dehydrogenase deficiency

采用液相色谱串联质谱法测定同分异构的长链羟基脂肪酸：在诊断长链 3-羟酰基辅酶 A 脱氢酶中的应用

注：新生儿筛查；血浆用量 5ml，测定游离 3-羟基脂肪酸含量

6. *Journal of Lipid Research.* Volume 46; 2005:21-26

Rapid quantification of free and esterified phytosterols in human serum using APPI-LC-MS/MS
快速定量分析人血清中游离及脂化植物甾醇

注：APPI;同时测定谷甾醇、菜油甾醇、菜籽甾醇等 4 种甾醇，线性范围 1-1000ng/ml

7. *Clinical Chemistry* 49:2 286–294 (2003)

Determination of Choline, Betaine, and Dimethylglycine in Plasma by a High-Throughput Method Based on Normal-Phase Chromatography – Tandem Mass Spectrometry

采用高通量的液相色谱串联质谱法同时测定血浆中的维生素 B，甜菜碱和二甲基氨基乙酸

注：沉淀蛋白法，三种物质同时测定，另加两种氘代内标，分析时间 3min，线性范围 0.4 – 400mmol/L,

8. *Anal. Chem.* 2000, 72, 791-799

Collision-Induced Dissociation of Ions within the Orifice-Skimmer Region of an Electrospray Mass Spectrometer

电喷雾质谱源内碰撞诱导解离

注：在不同锥孔电压下观察到不同的溶剂加合物

9. *Anal. Chem.* 2002, 74, 1197-1201

Collection, Storage, and Filtration of in Vivo Study Samples Using 96-Well Filter Plates To Facilitate Automated Sample Preparation and LC/MS/MS Analysis

采用 96 孔板采集、储存及过滤体内分析样品推进自动化样品预处理及质谱分析

注：药物候选化合物 EL-A 及 EL-B 线性范围为 3.9-4000 ng/mL.

10. *J. Mass Spectrom.* 2003; 38: 879–890

A strategy for liquid chromatography/tandem mass spectrometric assays of intracellular drugs: application to the validation of the triphosphorylated anabolite of antiretrovirals in peripheral blood mononuclear cells

液相色谱串联质谱分析细胞内药物方法探索：在外周血单核细胞中逆转录病毒药物三磷酸代谢物的确认中的应用

注：抗艾滋病药，负离子检测，线性范围分别为：去羟肌苷 53.39 – 2670 fmol/sample; 司夫他定 61.45 – 3073 fmol/sample

11. *Rapid Commun. Mass Spectrom.* 2003; 17: 2019–2026

Quantitation of midazolam in human plasma by automated chip-based infusion nanoelectrospray tandem mass spectrometry

采用自动 chip-based infusion 纳电喷雾质谱法定量分析人血浆中的咪达唑仑

注：正离子方式检测，线性范围 1.5 – 500 ng/mL

12. *Journal of pharmaceutical sciences*, VOL.91, NO.2, February 2002:405-416

Simultaneous determination of unlabeled and carbon-13-labeled etoricoxib, a new cyclooxygenase-2 inhibitor, in human plasma using HPLC-MS-MS

采用液相色谱串联质谱法同时测定依托考昔(一种新型选择性环氧化酶 2 抑制剂)及其碳 13 同位素标记物

注: 正离子方式检测, 线性范围 0.5 - 250 ng/mL, 5-2500ng/mL

13. *Rapid Commun. Mass Spectrom.* 2003; 17: 1950-1957

Matrix effects during analysis of plasma samples by electrospray and atmospheric pressure chemical ionization mass spectrometry: practical approaches to their elimination

血浆样品质谱分析中大气压化学离子化及电喷雾离子化基质抑制效应分析: 实践方法以消除基质抑制效应

14. *Anal. Chem.* 2000, 72, 1913-1917

Automated 96-Well SPE and LC-MS-MS for Determination of Protease Inhibitors in Plasma and Cartilage Tissues

96-孔固相萃取液相色谱串联质谱法测定血浆及软骨组织中的蛋白酶抑制剂

注: 两种癌症候选化合物的线性范围分别为 0.2-200 ng/mL 及 0.5-300 ng/; 正离子方式

15. *Anal. Chem.* 1999, 71, 2294-2300

High-Throughput Bioanalytical LC/MS/MS Determination of Benzodiazepines in Human Urine: 1000 Samples per 12 hours

高通量的生物样品 LC/MS/MS 分析测定人尿中苯二氮卓类化合物: 每 12 小时分析高达 1000 个样品

注: 六种苯二氮卓类化合物四种内标, 同时分析, 每个样品分析时间仅为 30 秒

16. *Anal. Chem.* 2001, 73, 4704-4710

Evaluation of Triterpene Glycoside Estrogenic Activity Using LC/MS and Immunoaffinity Extraction 采用免疫亲和提取及液质联用法评价三萜糖苷雌激素活性

17. *Anal. Chem.* 1999, 71, 2340-2345

Liquid-Liquid Extraction in the 96-Well Plate Format with SRM LC/MS Quantitative Determination of Methotrexate and its Major Metabolite in human Plasma

96 孔液液萃取法及多反应监测液质联用法定量分析人血浆中甲氨喋呤及其主要活性代谢物

注: 甲氨喋呤及其活性代谢物 7-羟基甲氨喋呤及二内标, 同时分析, 分析时间为 1.2min, 该方法精密度低于 7.5%, 准确度低于 10.2%, 两条标准曲线 r 值均大于 0.999

18. *Anal. Chem.* 2001, 73, 439-443

A 384-Well Solid-Phase Extraction for LC/MS/MS Determination of Methotrexate and Its 7-Hydroxy Metabolite in Human Urine and Plasma

384 孔固相萃取 LC/MS/MS 法定量分析人尿及血浆中甲氨喋呤及其代谢物甲氨喋呤

19. *Rapid Commun. Mass Spectrom.* 2003; 17: 794-799

Method development for the concentration determination of a protein in human plasma utilizing 96-well solid-phase extraction and liquid chromatography/ tandem mass spectrometric detection 96 孔固相萃取液质联用法测定人血浆中蛋白质 rK5 的浓度

注: 分子量为 10 464 Da. 线性范围可达 50 ng/mL 到 10mg/mL.

20. *Anal. Chem.* 2002, 74, 5470-5479

Atmospheric Pressure Photoionization Mass Spectrometry. Ionization Mechanism and the Effect of Solvent on the Ionization of Naphthalenes

大气压光电离质谱法. 离子化机制及溶剂对萘离子化的影响

注: 研究了 13 种不同的溶剂系统对 7 种萘化合物离子化的影响, 发现掺杂剂的加入可大大

增加离子化效率。另外，在正离子方式下，甲醇乙腈可辅助离子化，在负离子方式下，酸性溶剂有助于离子化

21. *Anal. Chem.*2003, 75,6430-6436

Chip-Based P450 Drug Metabolism Coupled to Electrospray Ionization-Mass Spectrometry Detection

电喷雾离子化质谱监测法研究细胞色素 P450 药物代谢机制

22. *Rapid Commun. Mass Spectrom.* 2002; 16: 1501–1505

Generic fast gradient liquid chromatography/tandem mass spectrometry techniques for the assessment of the in vitro permeability across the blood-brain barrier in drug discovery
快速梯度洗脱液质联用技术在新药开发血脑屏障透过率评价中的应用

注：本篇文章提到与 ESI 比较，APCI 更适于高浓度缓冲盐的分析，同时其离子抑制较低，是复杂生物样品的首选离子化方式。研究了 28 种候选化合物，线性范围：5-0.005uM

23. *Anal. Chem.*2003, 75,5969-5977

Development of LC/MS/MS Methods for Cocktail Dosed Caco-2 Samples Using Atmospheric Pressure Photoionization and Electrospray Ionization

大气压光电离及电喷雾离子化液相色谱串联质谱法测定 Caco-2 鸡尾酒试验样品（N in one 多合一试验）

注：Caco-2 细胞链是人结肠癌细胞，可以作为肠上皮细胞的模型；本文尝试了 APPI 及 ESI 两种离子源，和正负离子化方式，分析了 9 个化合物的肠渗透性

24. *Rapid Commun. Mass Spectrom.* 2002; 16: 1785–1792

Generic serial and parallel on-line direct-injection using turbulent flow liquid chromatography/tandem mass spectrometry

采用高流速液相色谱串联质谱法连续的平行的在线直接进样分析方法注：六种苯二氮卓类化合物四种内标，同时分析，每个样品分析时间仅为 30 秒

注：线性范围可达 0.1ng/mL 到 100ng/mL.分析时间小于 1min，准确度和精密度均低于 6.3%

25. *Current Separations* 19:2(2000)

Ramifications of Pump-Switching Step Gradients for Bioanalytical LC/MS/MS Assays

泵切换梯度洗脱技术用于生物样品 LC/MS/MS 分析

注：采用泵切换技术，峰型，分离效果及分离时间得到改善，离子抑制减少

26. *Anal. Chem.*2000, 72,3547-3552

LC/MS/MS Analyses of an Oleander Extract for Cancer Treatment

LC/MS/MS 法分析用于癌症治疗的甲竹桃提取物

注：四种甲竹桃提取物（强心剂）用 QqTOF 定性，用 API 3000 定量，线性范围达 4 个数量级 1ng/ml-10mg/ml（人血浆浓度）

27. *Rapid Commun. Mass Spectrom.* 2002; 16: 1785–1792

Investigation of matrix effects in bioanalytical high-performance liquid chromatography/tandem mass spectrometric assays: application to drug discovery

研究液质联用法生物样品分析中基质抑制效应：在药物开发中的应用

注：研究了不同厂家，不同离子化方式，不同流速，及抗凝、储存、分析过程对离子抑制的影响

API 4000 文献总结

1. *Journal of Chromatography B* 813 (2004) 337–342

Simultaneous determination of enalapril and enalaprilat in human plasma by liquid chromatography – tandem mass spectrometry method

液相色谱-电喷雾串联质谱法同时测定血浆中依那普利及其活性代谢物依那普利拉

注：依那普利及其活性代谢物依那普利拉最低定量浓度均为 0.1ng/ml，ESI+，线性范围为 10*3

2. *Rapid Commun. Mass Spectrom.* 2004; 18: 2426–2436

Trace determination of anthracyclines in urine: a new high-performance liquid chromatography/tandem mass spectrometry method for assessing exposure of hospital personnel

液相色谱串联质谱法痕量分析医务工作人员尿样中的抗肿瘤药物

注：doxorubicin（阿霉素）和 epirubicin 的最低定量浓度(LLOQ) 为 0.10mg/mL, daunorubicin（柔毛霉素）和 idarubicin 的 LLOQ 为 0.03mg/L. 它们的最低检测限 (LODs) 分别为 0.04 and 0.01mg/mL.ESI+

3. *Anal. Chem.*2003, 75,6265-6274

Analysis of Endocrine Disruptors, Pharmaceuticals, and Personal Care Products in Water Using Liquid Chromatography/Tandem Mass Spectrometry

液相色谱串联质谱法分析水中的致内分泌紊乱物质（药物、类固醇、个人保健用品）

注：27 种化合物的分析，其中大部分物质的检测限均低于 1pg/ml，采用 ESI+/-,及 APCI+等方式检测，分析时间为 21 分钟

4. *Anal. Chem.*2003, 75,6084-6088

Determination of Hyperforin in Mouse Brain by High-Performance Liquid Chromatography/Tandem Mass Spectrometry

液相色谱串联质谱法分析大鼠脑中的抗抑郁药物 Hyperforin

注：定量下限 0.25ng/ml,ESI-

5. *Anal. Chem.*2003, 75,4827-4832

Simultaneous Determination of Five Tobacco-Specific Nitrosamines in Mainstream Cigarette Smoke by Isotope Dilution Liquid Chromatography/Electrospray Ionization Tandem Mass Spectrometry

采用液相色谱电喷雾串联质谱同时测定 5 种烟草制品中特有的亚硝胺物质

注：ESI+，定量下限从 0.05ng/ml 到 1.23ng/ml 不等

6. *Technical note from ABI*

Analysis of Nitrofurantoin Metabolites in Poultry Muscles Using the API 4000TM LC/MS/MS System

采用 API 4000 分析肉类中的硝基呋喃代谢物残留

注：5 分钟内分析 4 种硝基呋喃代谢物,最低定量浓度为 11 到 30pg/ml 不等，检测限为 3 到 8pg/ml 不等

7. *Technical note from ABI*

Simultaneous determination of residues of approximately 100 pesticides and metabolites in fruit and vegetable by LC/MS/MS

LC/MS/MS 法同时监测水果及蔬菜中 100 种杀虫剂及其代谢物残留

注：正负离子切换，0.01mg/kg,API 2000/3000/4000