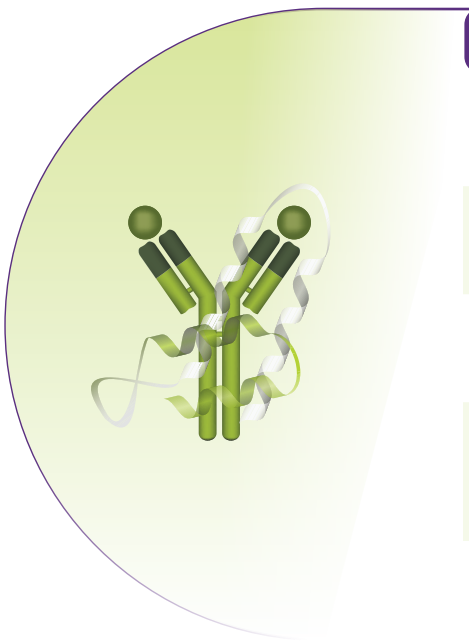
analytes extracted from Mitra® samples

neoteryx™

The promise of microsampling, delivered

May 2021 Edition



Proteins | Peptides

Analytes	Reference
IGF-1	*Study 1* | *Study 2* | *Study 3* | *Study 4*
rheumatoid factors | anti-IgM RF, anti-IgA RF, anti-CCP, anti-MCV	*Volumetric Absorptive Micro Sampler (VAMS or Mitra) in Clinical Diagnostic:*
proteomics | β-galactosidase, HSA, APO A-I, APO C-I, APO C-III, APO E, CRP, cystatin C, periostin	*Volumetric Absorptive Microsampling Integrated Into an Automated Bottom-Up Proteomics Workflow*
proteomics | apolipoproteins (apo)	*Study 1* | *Study 2* | *Study 3* | *Study 4*
proteomics | various proteins and peptides	*Standardized workflow for precise mid- and highthrough-put proteomics of blood biofluids*
HbA1c	*Study 1* | *Study 2* | *Study 3*
protein mix | β-lactoglobulin, myoglobin, cytochrome c, albumin	*Volumetric absorptive MicroSampling vs. other blood sampling materials in LC-MS-based protein analysis - preliminary investigations.*
C-peptide	*Microsampling Collection Methods for Measurement of C-peptide in Whole Blood. Journal of Diabetes Science and Technology*
therapeutic mAbs | dalimumab, infliximab, ustekinumab, vedolizumab, tocilizumab, natalizumab, rituximab	*Capillary blood microsampling to determine serum biopharmaceutical concentration: Mitra microsampler vs dried blood spot*
therapeutic mAbs | trastuzumab, daclizumab	*Study 1* | *Study 2*
therapeutic mAbs | proprietary molecule	*Volumetric absorptive microsampling (VAMS®) in therapeutic protein quantification by LC-MS/MS: Investigation of anticoagulant impact on assay performance and recommendations for best practices in method development*
therapeutic mAbs | various	*The Evolving Role of Microsampling in Therapeutic Drug Monitoring of Monoclonal Antibodies in Inflammatory Diseases*
therapeutic mAbs | infliximab (IFX)	*Study 1* | *Study 2*
therapeutic mAbs | adalimumab	*Monitoring of Adalimumab Concentrations at Home in Patients with Inflammatory Bowel Disease Using Dried Blood Samples*
serology | SARS-CoV-2 antibodies	*Study 1* | *Study 2* | *Study 3* | *Study 4* | *Study 5* | *Study 6* | *Study 7* | *Study 9* | *Study 10* | *Study 11* | *Study 12* | *Study 13*
serology | flu, anti-influenza IgG	*Application of volumetric absorptive microsampling (VAMS) to measure multidimensional anti-influenza IgG antibodies by the mPlex-Flu assay*
SARS-CoV-2 spike & nucleocapsid proteins	*Study 1* | *Study 2*

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Drugs of Abuse

Analytes	Reference
cathinones | methylone, ethylone, butylone, mephedrone, 4-MEC, MDPV	*LC-MS/MS and VAMS for quantitative bioanalysis of cathinone analogues in dried urine, plasma and oral fluid samples*
cannabinoids | cannabaidiol (Epidolex®), CBD natural and synthetic	*Study 1* | *Study 2* | *Study 3* | *Study 4*
opioids | oxycodone, noroxycodone, oxymorphone	*Determination of oxycodone and its major metabolites in haematic and urinary matrices: Comparison of traditional and miniaturised sampling approaches*
30 common drugs of abuse	*Quantitative Swab Touch Spray Mass Spectrometry for Oral Fluid Drug Testing*
cocaine and metabolites	*Blood and Plasma Volumetric Absorptive Microsampling (VAMS) Coupled to LC-MS/MS for the Forensic Assessment of Cocaine Consumption*
Alcohol Consumption Biomarker | PEth	*Study 1* | *Study 2*
Medications & Illicit Compounds	*Multiplex Analysis of 230 Medications and 30 Illicit Compounds in Dried Blood Spots and Urine*
gamma-hydroxybutyric acid(GHB)	*Development and validation of volumetric absorptive microsampling coupled with UHPLC–MS/MS for the analysis of gamma□hydroxybutyric acid in human blood*

Small Molecule Drugs

Analytes	Reference
antibiotics | piperacillin, tazobactam, meropenem, linezolid and ceftazidime	*Application of Mitra Microsampling For The Quantification of Antibiotics*
antibiotic | fosfomycin	*Quantitative Bioanalytical Validation of Fosfomycin in Human Whole Blood With VAMS*
antibiotic | creatinine	*Simultaneous determination of vancomycin and creatinine in plasma applied to volumetric absorptive microsampling devices using liquid chromatography-tandem mass spectrometry*
antibiotic | vancomycin	*Study 1* | *Study 2*
antibiotic | cefepime	*Development and validation of a volumetric absorptive microsampling- liquid chromatography mass spectrometry method for the analysis of cefepime in human whole blood: Application to pediatric pharmacokinetic study*
antibiotic | doxycycline	*A Validated Volumetric Absorptive Microsampling-Liquid Chromatography Tandem Mass Spectrometry Method to Quantify Doxycycline Levels in Urine: An Application to Monitor the Malaria Chemoprophylaxis Compliance*
antibiotic | gentamicin	*Microsampling for monitoring gentamicin in neonates*
anti-cancer | hydroxyurea	*Study 1* | *Study 2*
antidepressants | fluoxetine, norfluoxetine **antidiabetic** | glipzide	*Evaluation of Two Blood Microsampling Approaches For Drug Discovery PK Studies in Rats*
antidepressants | venlafaxine, desvenlafaxine	*Clinical validation study to derive conversion factors from capillary blood concentration to plasma concentration for venlafaxine and desvenlafaxine.*
anti-depressants (next gen) | sertraline, fluoxetine, citalopram and vortioxetine	*Whole blood and oral fluid microsampling for the monitoring of patients under treatment with antidepressant drugs*
antidiabetic | exenatide	*Large Molecule Application of VAMS For The Determination of a Single-Rodent PK Profile for Exenatide by LC-MS/MS*

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Small Molecule Drugs *continued*

Analytes	Reference
antifungal | voriconazole, voriconazole n-oxide	*Development and validation of a volumetric absorptive microsampling assay for analysis of voriconazole and voriconazole N-oxide in human whole blood*
antifungal | itraconazole	*Sampling Only Ten Microliters of Whole Blood For The Quantification of Poorly Soluble Drugs: Itraconazole as Case Study*
anti-inflammatory | acetominophen, paracetemol	*Study 1* | *Study 2* | *Study 3* | *Study 4* | *Study 5*
anti-inflammatory | aspirin	*Quantitative analysis of acetylsalicylic acid in human blood using volumetric absorptive microsampling. Transl Clin Pharmacol. 2018 Mar;26(1):32-38*
anti-inflammatory | naproxen	*Volumetric absorptive microsampling combined with impact-assisted extraction for hematocrit effect free assays*
anti-parasitic | miltefosine	*VAMS as an Alternative to Conventional DBS Cards in The Quantification of Miltefosine in Dried Blood Samples*
anti-parasitic | albendazole, albendazole sulfoxide, albendazole sulfone	*Pharmacokinetics of albendazole, albendazole sulfoxide and albendazole sulfone determined from plasma, blood, dried blood spots and Mitra® samples of hookworm-infected adolescents*
anti-rheumatic | hydroxychloroquine	*Study 1* | *Study 2*
anti-rheumatic | methotrexate polyglutamate	*Transition of Methotrexate Polyglutamate Drug Monitoring Assay from Venipuncture to Capillary Blood-Based Collection Method in Rheumatic Diseases*
anti-rheumatic | hydroxychloroquine, methotrexate	*Capillary Blood Levels of Hydroxychloroquine and Methotrexate Are Stable for up to 5 Years When Collected on Volumetric Absorptive Microsamplers*
visual cycle modulators | emixustat	*Bioanalysis of emixustat in whole blood collected with VAMS by LC-MS/MS*
cardiovascular drugs | amlodipine, atenolol, atorvastatin, bisoprolol, diltiazem, lisinopril, losartan, ramipril, simvastatin, valsartan	*Volumetric absorptive microsampling (VAMS) coupled with high-resolution, accurate-mass (HRAM) mass spectrometry as a simplified alternative to dried blood spot (DBS) analysis for therapeutic drug monitoring of cardiovascular drugs*
stimulants | paraxanthine	*Does Volumetric Absorptive Microsampling Eliminate The Hematocrit Bias for Caffeine And Paraxanthine in Dried Blood Samples? A Comparative Study*
sedative | midazolam	*Supporting a paediatric study using wet and dry samples Analytical Considerations*
GSKA | proprietary small molecule drug currently under clinical development	*Drug monitoring by volumetric absorptive microsampling: method development considerations to mitigate hematocrit effects*
antidiabetic | sitagliptin	*Extractability-mediated stability bias and hematocrit impact: High extraction recovery is critical to feasibility of volumetric adsorptive microsampling (VAMS) in regulated bioanalysis*
antiretroviral | raltegravir	*Extractability-mediated stability bias and hematocrit impact: High extraction recovery is critical to feasibility of volumetric adsorptive microsampling (VAMS) in regulated bioanalysis.*
antiretroviral | ritonavir	*Volumetric absorptive microsampling combined with impact-assisted extraction for hematocrit effect free assays*
antihelmintics | praziquantel	*Evaluation of a novel micro-sampling device, Mitra®, in comparison to dried blood spots, for analysis of praziquantel in Schistosoma haematobium-infected children in rural Côte d'Ivoire*
bronchodilator | salbutamol	*Quantitation of salbutamol using micro-volume blood sampling – applications to exacerbations of pediatric asthma*

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Small Molecule Drugs *continued*

Analytes	Reference
antipsychotics | amisulpride, aripiprazole, clozapine, olanzapine, quetiapine, risperidone, ziprasidone	*TDM by Means of Novel Sampling (VAMS) And Extraction Procedures - A Comparative Study*
anti-seizure | radiprodil	*A pharmacokinetic study of radiprodil oral suspension in healthy adults comparing conventional venous blood sampling with two microsampling techniques*
anti-epileptics	*Study 1* | *Study 2* | *Study 3* | *Study 4* | *Study 5* | *Study 6*
anti-depressants | amitriptyline (ATP), nortriptyline (NTP), citalopram (CIT), clozapine (CLO), norclozapine (NCL), mirtazapine (MIT), paroxetine (POX), quetiapine (QUE), norquetiapine (NQU), risperidone (RIS), paliperidone (PAL), sertraline (SER), venlafaxine (VEN, desvenlafaxine (ODV)	*Validation and clinical application of a volumetric absorptive microsampling method for 14 psychiatric drugs*
antipsychotics | amisulpride, aripiprazole, clozapine, cyamemazine, haloperidol, melperone, olanzapine, paliperidone, pipamperone, promethazine, prothipendyl, quetiapine, risperidone	*Development, validation, and application of a quantitative volumetric absorptive microsampling–based method in finger prick blood by means of LC-HRMS/MS applicable for adherence monitoring of antipsychotics*
gamma-hydroxybutyric acid(GHB)	*Development and validation of volumetric absorptive microsampling coupled with UHPLC–MS/MS for the analysis of gamma□hydroxybutyric acid in human blood*
midazolam	*Validation of methods for determining pediatric midazolam using wet whole blood and volumetric absorptive microsampling*
phenobarbital	*Dried blood microsampling-based therapeutic drug monitoring of anti-epileptic drugs in children with nodding syndrome and epilepsy in Uganda and the Democratic Republic of the Congo.*
tranexamic acid	*Tranexamic acid quantification in human whole blood using liquid samples or volumetric absorptive microsampling devices*
amisulpride, amisulpride, clozapine, ganciclovir, lamotrigine, paliperidone, paroxetine, quetiapine, risperidone, topiramate, venlafaxine, zonisamide	*Analysis of 14 drugs in dried blood microsamples in a single workflow using whole blood and serum calibrators*
vancomycin	*A whole blood microsampling assay for vancomycin: development, validation and application for pediatric clinical study*
selumetanib	*Novel LC–MS/MS method for the determination of selumetinib (AZD6244) in whole blood collected with volumetric absorptive microsampling*
clenbuterol	*VAMS and StAGE as innovative tools for the enantioselective determination of clenbuterol in urine by LC-MS/MS*
antidepressant, antipsychotic	*Feasibility of a Noninterventional Decentralized Clinical Trial Model in Adults with Major Depressive Disorder*
danicamtiv	*Study 1* | *Study 2*
doxycycline	*A Validated Volumetric Absorptive Microsampling-Liquid Chromatography Tandem Mass Spectrometry Method to Quantify Doxycycline Levels in Urine: An Application to Monitor the Malaria Chemoprophylaxis Compliance*
iohexol	*Study 1* | *Study 2*

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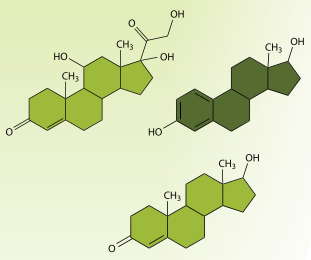
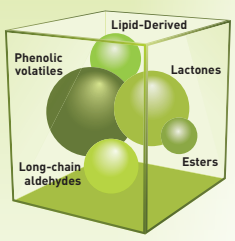


Hormones | Steroids

Analytes	Reference
estetrol	*Whole Blood Microsampling For The Quantitation of Estetrol Without Derivatization by Liquid Chromatography-Tandem Mass Spectrometry*
cortisol & testosterone	*Measurement of Cortisol and Testosterone in Athletes: Accuracy of Liquid Chromatography-Tandem Mass Spectrometry Assays for Cortisol and Testosterone Measurement in Whole-Blood Microspecimens*
anabolic steroids | testosterone, epitestosterone, dihydrotestosterone, nandrolone, norethandrolone, androstenedione, mesterolone, methandrostenolone, danazol	*Overcoming Biosampling Issues in Sport Drug Testing*
anabolic steroids | various	*Dried blood spots in doping analysis*
estrogens	*Comparison of nanofluidic and ultra-high performance liquid chromatography-tandem mass spectrometry for high sensitive pharmacokinetic studies of estrogens starting from whole blood microsampling*
hepcidin	*Hepcidin Determination in Dried Blood by Microfluidic LC-MS/MS: Comparison of DBS And VAMS for Matrix Effect And Recovery.*
testosterone, androstenedione & 17-hydroxy-progesterone	*Quantification of testosterone, androstenedione and 17-hydroxyprogesterone in whole blood collected using Mitra microsampling devices*
corticosterone, dehydrocorticosterone progesterone	*Influence of Low Protein Diet-Induced Fetal Growth Restriction on the Neuroplacental Corticosterone Axis in the Rat*
glucocorticoids | cortisol, corticosterone, cortisone, dexamethasone, methylprednisolone, fludrocortisone	*Microsampling and LC–MS/MS for antidoping testing of glucocorticoids in urine*



Metabolomics & Metabolism

Analytes	Reference
breast cancer metabolites	*Comparative study on microsampling techniques in metabolic fingerprinting studies applying gas chromatography-MS analysis.*
polar blood metabolome	*Pre-analytic evaluation of volumetric absorptive microsampling and integration in a mass spectrometry-based metabolomics workflow*
urinary metabolites	*Evaluation of the Mitra microsampling device for use with key urinary metabolites in patients with Alkaptonuria)*
amino acids, organic acids	*Targeted metabolomics of whole blood using volumetric absorptive microsampling*
collecting metabolomic fluids w/ VAMS® (mini review)	*Biofluid Collection in Metabolomics by the Application of the novel Volumetric Absorptive Microsampling Technology: a mini-Review*
fatty acids	*Quantitating fatty acids in dried blood spots on a common collection card versus a novel wicking sampling device*
lipidomics	*Volumetric Absorptive Microsampling of Blood for Untargeted Lipidomics*
dimethyl-oxalylglycine (DMOG), methyl-oxalyl-glycine (MOG), n-oxalylglycine (NOG)	*Development of novel MOG analogues with increased stability to explore 2 MCT2 and α-ketoglutarate biology in vivo*

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Metals

Analytes	Reference
biomarker | Fe	*Iron isotopic analysis of finger-prick and venous blood by multi-collector inductively coupled plasma-mass spectrometry after volumetric absorptive microsampling*
multi-element analysis	*Analysis of Whole Blood by ICP-MS Equipped With a High Temperature Total Sample Consumption System*
prosthesis-related metals | Co, Cr, Al, Ti, V, Ni, Sr, Zr	*Study 1* | *Study 2*
elemental clinical analysis	*Dried matrix spots and clinical elemental analysis. Current status, difficulties, and opportunities*
cobalt - metal-on-metal prosthesis	*Development, validation and application of an inductively coupled plasma – Mass spectrometry method to determine cobalt in metal-on-metal prosthesis patients using volumetric absorptive microsampling*
mercury (Hg)	*A simple and direct atomic absorption spectrometry method for the direct determination of Hg in dried blood spots and dried urine spots prepared using various microsampling devices*

DNA / RNA

Analytes	Reference
miRNA library, SNPs, qPCR	*Total RNA/DNA Purification And Detection From Blood Preserved on a Mitra® Microsampling Device*
circulating RNA, NGS	*NGS analysis of total small non coding RNAs from low input RNA from dried blood sampling*
small noncoding RNAs | miRNA, snoRNA, YRNA, tRNA	*The sncRNA Zoo: a repository for circulating small noncoding RNAs in animals*
miRNA	*Spring is in the air: seasonal profiles indicate vernal change of miRNA activity*

Cytotoxins

Analytes	Reference
sulfur mustard albumin adducts	*Procedures For Analysis of Dried Plasma Using Microsampling Devices to Detect Sulfur Mustard-Albumin Adducts For Verification of Poisoning*
saxitoxin	*Quantification of Saxitoxin in Human Blood by ELISA*

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Immunosuppressants

Immunosuppressive Therapy

Analytes	Reference
methotrexate	*Volumetric Absorptive Micro Sampler (VAMS or Mitra) in Clinical Diagnostic*
cyclosporin A, tacrolimus, ascomycin, sirolimus, everolimus, temsirolimus	*Study 1* | *Study 2*
tacrolimus	*Study 1* | *Study 2* | *Study 3* | *Study 4* | *Study 5* *Study 6* | *Study 7* | *Study 8*
cyclosporine A, everolimus, sirolimus, and tacrolimus	*Feasibility of Immunosuppressant Drug Monitoring by a Microsampling Device*
everolimus	*Validation and clinical application of an LC-MS/MS method for the quantification of everolimus using volumetric absorptive microsampling*
cyclosporine A, tacrolimus	*Volumetric Microsampling of Capillary Blood Spot vs Whole Blood Sampling for Therapeutic Drug Monitoring of Tacrolimus and Cyclosporin A: Accuracy and Patient Satisfaction*
mycophenolic acid, tacrolimus, sirolimus, everolimus, cyclosporin A	*VAMS for Assaying Immunosuppressants from Venous Whole Blood by LC-MS/MS Using a Novel Atmospheric Pressure Ionization Probe (Unispray™)*
tacrolimus, creatinine	*Assessment of tacrolimus and creatinine concentration collected using Mitra microsampling devices*

Vitamins / Supplements

Analytes	Reference
biomarker | 25-hydroxy vitamin D_3	*Study 1* | *Study 2* | *Study 3*
5-Methyltetrahydrofolic Acid (Folate)	*Assessing VAMS Coupled with Stable Isotope Dilution Assay and Liquid Chromatography-Tandem Mass Spectrometry as Potential Diagnostic Tool for Whole Blood 5-Methyltetrahydrofolic Acid*
thiamine, vitamin B1	*Patient-Centric Assessment of Thiamine Status in Dried Blood Volumetric Absorptive Microsamples Using LC–MS/MS Analysis*

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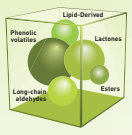

VAMS® Technology Reviews

Keywords	Reference
sampling, drying, transportation, extraction	*Study 1* | *Study 2* | *Study 3*
point-of-care device, minimally invasive	*Study 1* | *Study 2*
sampling, bioanyltical applications, SARS-CoV-2	*Quantitative microsampling for bioanalytical applications related to the SARS-CoV-2 pandemic: Usefulness, benefits and pitfalls*
bridging, clinical operations, DBS, home sampling, patient-centric sampling, pharmacodynamic, pharmacokinetic	*Giving patients choices: AstraZeneca's evolving approach to patient-centric sampling*
sampling, bioanalysis, assay, therapeutic drug monitoring	*Technological advancement in dry blood matrix microsampling and its clinical relevance in quantitative drug analysis*
DBS testing, health services, kidney transplant recipients, patient monitoring, survey, venepuncture	*Kidney transplant recipient's perceptions of blood testing through microsampling and venepuncture*
TDM, clinical trials	*Volumetric Absorptive Microsampling as a Sampling Alternative in Clinical Trials and Therapeutic Drug Monitoring During the COVID-19 Pandemic: A Review*
collecting metabolomic fluids w/ VAMS® (mini review)	*Biofluid Collection in Metabolomics by the Application of the novel Volumetric Absorptive Microsampling Technology: a mini-Review*

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