Unravelling the sugar-coating of prostate-specific antigen : method development and its application to prostate cancer research

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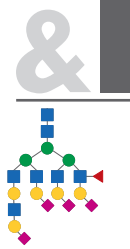
LIST OF ABBREVIATIONS

μ_a	Electrophoretic mobility of the analyte ($\mu_e + \mu_{EOF}$)
μ_e	Electrophoretic mobility
μ_{eff}	Effective electrophoretic mobility
μ_{EOF}	Electrophoretic mobility of electro-osmotic flow
2-AA	2-aminobenzoic acid
2-AB	2-aminobenzamide
4K	Four kallikrein subforms
AAC	Ammonium acetate
ABC	Ammonium bicarbonate
AFP	α-Fetoprotein
a_i	Degree of ionization
AMC	Academic Medical Center
ANTS	8-Aminoapthalene-1,3,6-trisulfonic acid
APTS	8-Aminopyrene-1,3,6-trisulfonic acid
Asn	Asparagine
BFS	Bare fused silica
BGE	Background electrolyte
BPH	Benign prostate hyperplasia
bPSA	Benign prostate-specific antigen
BSA	Bovine serum albumin
CE	Capillary electrophoresis
CEA	Carcinoembryonic antigen
CEC	Capillary electrochromatography
CE-ESI-MS	Capillary electrophoresis - electrospray ionization - mass spectrometry
CE-MS	Capillary electrophoresis - mass spectrometry
CGE	Capillary gel electrophoresis
CHES	2-(Cyclohexylamino)ethane sulfonic acid
CHO	Chinese hamster ovary
CID	Collision induced dissociation
CIEF	Capillary iso-electrofocusing
CNS	Chaperones calnexin
cPSA	Complexed prostate-specific antigen
CRM	Charge residue model
CRT	Calreticulin
CZE	Capillary zone electrophoresis
DA	Double amidation
DEN	Dopant enriched nitrogen
dol	Dolichol
DRE	Digitial rectal examination
DTT	DL-diothiotreitol
E	Electric fied (V/cm)
EBRT	External beam radiation therapy
ECD	Electron capture dissociation
EDC	1-Ethyl-3-(3-(dimethylamino) propyl)-carbodiimide
EEA	Ethyl esterification and amidation
EIE	Extracted ion electropherogram
EOF	Electro-osmotic flow
ER	Endoplasmic reticulum
ESI	Electrospray ionization
ETD	Electron transfer dissociation
EtOH	Ethanol
F	Fucose
FA	Formic acid
Fc	Fragment crystallizable
FDA	Food and drug administration
FLD	Fluorescence
fPSA	Free PSA
FT-ICR	Fourier-transform Ion Cyclotron Resonance
Fuc	α-L-Fucose
FUP	Female urine pool
FUT1	α1,2 Fucosyltransferase
FUT3	α1,3/α1,4 Fucosyltransferase
FUT8	α1,6 Fucosyltransferase
Gal	β-*D*-galactose



GalNAc	β-*N*-acetyl-D-galactosamine
GalNAcT4	β1,4 *N*-acetyl-D-galactosaminyltransferase
GirP	Girard's reagent P
Glc	β-D-glucose
GlcNAc	β-*N*-acetyl-D-glucosamine
H	Hexose
HAc	Glacial acetic acid
HCD	Higher-energy collision induced dissociation
HCl	Hydrochloric acid
HER2	Human epidermal growth factor receptor 2
HILIC	Hydrophilic interaction liquid chromatography
hK2	Human kallikrein 2
hK3	Human kallikrein 3
hK4	Human kallikrein 4
HOBt	1-Hydroxybenzotirazole
Hp	Haptoglobin
i.d.	Internal diameter
IAA	Iodoacetamide
IEM	Ion evaporation mechanism
IgG	Immunoglobulin G
IgGmAb1	Recombinant monoclonal IgG1 antibody
IPA	Isopropanol
IPQ	Isotopic pattern quality score
iPSA	Inactive PSA
IS	Internal standard
IT	Ion trap
ITP	Isotachophoresis
IVIgG	Intravenous immunoglobulin G, human polyclonal IgG
KLK-3	Human kallikrein 3
l	Effective capillary length (until detector, cm)
L	Total capillary length (cm)
LacNAc	Poly-β-D-galactose-β-*N*-acetyl-D-glucosamine
LC	Liquid chromatography
LE	Leading electrolyte
LIF	Laser induced fluorescence
LNCaP	Lymph node carcinoma of the prostate
LOD	Limit of detection
m	Mass
m/z	Mass to charge ratio (Thomson)
mAbs	Monoclonal antibodies
MALDI-TOF-MS	Matrix assisted laser/ desorption ionization time-of-flight mass spectrometry
Man	β-***D***-mannose
MeCN	Acetonitrile
MEKC	Micellar electrokinetic chromatography
MeOH	Methanol
MES	2-(N-morpholino) ethanesulfonic acid
MOPS	3-Morpholinopropanesulfonic acid
mpMRI	Multi-parametric magnetic resonance imaging
MQ	Milli-Q water
mRNA	Messenger ribonucleic acid
MS	Mass spectrometry
mt	Migration time
N	*N*-acetylhexosamine
NaCL	Sodium chloride
NaOH	Sodium hydroxide
Neu5Ac	α-*N*-acetylneuraminic acid
NMR	Nuclear magnetic resonance
NP-40	Nonidet P-40
o.d.	Outer diameter
OST	Oligosaccharyltransferase
P	Phosphate
PCa	Prostate cancer
PCA3	Gene PCA3
PGA	PSA Glycomics Assay
PGC	Porous graphitized carbon

PHI	Prostate health index
pK_a	Acid dissociation constant
PNGase F	Peptide-*N*-glycosidase F
preproPSA	Prepropolyprotein of prostate-specific antigen
proPSA	Precursor protein of prostate-specific antigen
PSA	Prostate-specific antigen
q	Charge of the ion
Q	Quadrupole
r	Radius of the ion
RSD	Relative standard deviation
RT	Room temperature
S	Sialic acid
S/N	Signal to noise ratio
SDS	Sodium dodecyl sulfate
Ser	Serine
SPE	Solid phase extraction
ST3	α2,3 Sialyltransferase
ST6	α2,6 Sialyltransferase
ST8	α2,8 Sialyltransferase
t_a	Migration time of the analyte (sec)
TE	Terminating electrolyte
TFA	Trifluoroacetic acid
Thr	Threonine
t-ITP	Transient-isotachophoresis
TMT	Aminoxy-tandem mass tag
TNM	Tumor size, involved lymph nodes and distant metastasis
TOF	Time-of-flight
TPNG	Total human plasma protein *N*-glycome
tPSA	Total PSA
TRICINE	N-(tris(hydroxymethyl)-methyl) glycine
TRUS	Transrectal ultrasonography
TSNG	Total serum *N*-glycome
UDP	Uridine diphosphate
UEA-1	*Ulex europaeus*
UGM	Urine glycoprofile marker
UV	Ultraviolet
V	Applied voltage
v	Velocity of the analyte
vEOF	Velocity of the electro-osmotic flow
z	Electric charge
β4galT	β1,4 galactosyltransferase
ζ	Zeta-potential
η	Viscosity of the buffer