

# Effectiveness of Different Common Carriers for the Immunogenicity of Synthetic Peptides

Dissertation

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## ABBREVIATIONS

$\alpha$ -	anti-
$\mu$ l	microliter
A	alanine
Å	angstrom ( $1 \times 10^{-10}$ meter)
aa	amino acid
AAA	amino acid analysis
Ab	antibody
ACN	acetonitrile
AcOEt	ethylacetate
Ala	alanine
AMP-buffer	2-amino-2-diethyl-1-propanol
AOA	aminooxyacetyl
AP	alkaline phosphatase
APS	ammonium persulfate
Arg	arginine
ASC	antibody-secreting cells
Asn	asparagine
Asp	aspartic acid
BCIP	5'-bromo-4-chloro-3-indolyl phosphate
BDB	bis diazobenzidine
Bis	<i>N, N'</i> -methylene-bisacrylamide
Boc	<i>t</i> -butoxycarbonyl
Boc-AOA-NSu	Boc-aminooxyacetyl <i>N</i> -hydroxysuccinimide ester
Boc-Ser( <i>t</i> Bu)*DCHA	Boc- <i>O</i> - <i>tert</i> .-butyl- <i>L</i> -serine dicyclohexylamine
Boc-Ser( <i>t</i> Bu)-OSu	Boc- <i>O</i> - <i>tert</i> .-butyl- <i>L</i> -serine succinimide ester
BSA	bovine serum albumin
c	concentration
C	cysteine
CD	circular dichroism
CFA	complete Freund's adjuvant
cm	centimeter
CDR	complementarity determining region
COX	tetra oxime + cytokine
CP	peptide + cytokine
Cys	cysteine
D	aspartic acid
Da	dalton
DCHA	dicyclohexylamin
DCM	dichloromethane
DHB	2,5-dihydroxybenzoic acid
DIEA	<i>N, N</i> -diisopropylethylamine
DMF	<i>N, N</i> -dimethylformamide
DMSO	dimethyl sulfoxide
DTE	dithioerythritol
E	glutamic acid
EBIZ	<i>N</i> -ethylbenzisoazolium fluoborate
ECDI	1-(3-dimethylamino propyl)-3-ethylcarbodiimide
EDT	1,2-ethanedithiole
EDTA	ethylene-diamine-tetraacetic acid
ESI-MS	electro spray ionisation mass spectrometry
ESI-TOF	ESI time of flight mass spectrometry

EtOH	ethanol
<i>F</i>	phenylalanine
FACS	fluorescence-activated cell sorting
FCS	foetal calf serum
Fmoc	9-fluorenylmethyloxycarbonyl
<i>g</i>	gravity (9.81m/s <sup>2</sup> )
<i>G</i>	glycine
Gln	glutamine
Glu	glutamic acid
GM-CSF	granulocyte-macrophage colony stimulating factor
<i>h</i>	hour
<i>H</i>	histidine
HBTU	2-(1H-benzotriazol-1-yl)-1,1,3,3-tetramethyl-uronium hexafluorophosphate
4-HCCA	$\alpha$ -cyano-4-hydroxycinnamic acid
HIC	hydrophobic interaction chromatography
His	histidine
HOBt	1-hydroxybenzotriazole
HPLC	high performance liquid chromatography
<i>I</i>	isoleucine
i.p.	intraperitoneal
IAC	immunoaffinity chromatography
IBCF	isobutylchloroformate
ICF	incomplete Freund's adjuvant
IEC	ion exchange chromatography
IFN $\gamma$	$\gamma$ - interferon
IgA	immunoglobulin A
IgA1-P	IgA1-protease
IgA1-PA50	50 aa peptide of IgA1-protease serogroup A IV-1, aa 557-606 of mature protein; GenBank accession: AF012203
IgA1-PC20	20 aa peptide of IgA1-protease serogroup C ET-37, aa 584-603 of mature protein; GenBank accession: AF012208
IgE	immunoglobulin E
IgG	immunoglobulin G
IgM	immunoglobulin M
IL-2	interleukine-2
IL-4	interleukine-4
Ile	isoleucine
<i>K</i>	lysine
KLH	keyhole limpet hemocyanin
kDa	kilodalton
<i>l</i>	liter
<i>L</i>	liposomes
<i>L</i>	leucine
Leu	leucine
LPS	lipopolysaccharide
Lys	lysine
<i>M</i>	methionine
MAb	monoclonal antibody
MALDI MS	matrix-assisted laser desorption ionisation MS
MAP	multiple antigenic peptide
MBS	<i>m</i> -maleimidobenzoyl <i>N</i> -hydroxysuccinimide ester
MCDI	1-cyclohexyl-3-(2-morpholinyl-4-ethyl) carbodiimide methyl- <i>p</i> - toluene sulfonate
MCS	6-maleimidocaproic acyl <i>N</i> -hydroxysuccinimide ester
MDa	megadalton

MDP	muramyl dipeptide
Met	methionine
MetOH	methanol
MHC I/MHC II	major histocompatibility complex class I/II
min	minute
ml	milliliter
MPB-PE	4-( <i>p</i> -maleimidophenyl) butyryl phosphatidyl ethanolamine
MPLA	monophosphoryl lipid A
MS	mass spectrometry
MW	molecular weight
<i>N</i>	asparagine
n/a	not applicable
n/d	not determined
n/o	not observed
NBT	nitro blue tetrazolium chloride
NC	nitrocellulose
NEA	non-essential amino acids
NMP	<i>N</i> -methylpyrrolidone
NMR	nuclear magnetic resonance
NOESY	nuclear Overhauser effect spectroscopy
OA	ovalbumin
Octyl-POE	<i>n</i> -octyl-oligo-oxyethylene
OD/OD <sub>405</sub>	optical density/measured at 405 nm
o.n.	over night
OPA	orthophtaldialdehyde
OX	tetra-oxime
Pep	peptide
<i>P</i>	proline
PBS	phosphate buffered saline
PBST20	phosphate buffered saline + Tween20
PBST80	phosphate buffered saline + Tween80
PC	egg yolk phosphatidylcholine
PEG	polyethylene glycole
PG	phosphatidyl glycerol
PMC	2,2,5,7,8-pentamethylchroman-6-sulfonyl side protection
PNA	peptide nucleic acids
Pro	proline
PPIII	Proteose peptone III
PT	pertussis toxin
<i>Q</i>	glutamine
<i>R</i>	arginine
RP-HPLC	reversed phase HPLC
rpm	revolutions per minute
RT	room temperature
s	second
<i>S</i>	serine
s.c.	subcutaneous
SDS	sodium dodecyl sulphate
SDS-PAGE	SDS-polyacrylamide gel electrophoresis
Ser	serine
SPDP	<i>N</i> -succinimidyl 3-(2-pyridyldithio) propionate
SPPS	solid phase peptide synthesis
<i>T</i>	threonine
tBu	<i>O</i> - <i>t</i> -butyl side protection
TEMED	<i>N, N, N', N'</i> -tetramethyl-ethylendiamin
TFA	trifluoroacetic acid
TFE	trifluoroethanol
TG	thyroglobulin

Th cell	T-helper cell
Th1	T helper 1 cell
Th2	T helper 2 cell
Thr	threonine
TLC	thin layer chromatography
TLCK	<i>N</i> - $\alpha$ -p-tosyl-L-lysine chloromethyl ketone
$T_m$	thermal stability midpoint
TOCSY	total correlation spectroscopy
Tris	tris-hydroxymethyl-aminomethane
Trp	tryptophan
Trt	trityl side protection
TT	tetanus toxoid
Tyr	Tyrosine
U	unit
V	valine
Val	valine
W	tryptophan
WB	western blot