Post-Translational Modification	Cellular Location of Modification	Enzyme	Motif	Example	Mass Change (Monoisotopic)	Mass Change (Average)
N-Acetylation[1]	Co-translational modification, Secretory granules	N-acetyltransferases	N-terminal Ser or Ala and other residues	Alpha-MSH,[16] beta-endorphin, rat growth hormones, LeuEnk	+42.0106	+42.0373
Amidation[2]	Secretory granules	peptidylglycine a-amidating monooxygenase	C-terminal Gly	secretin, glucagons, VIP, GIP-like peptide, Vasopressin, Alpha-MSH[16]	-58.0036	-58.0366
Bromination[3]	Unknown	Unknown	Trp	Neuropeptide B[17]	+77.9105	+78.8962
γ-Carboxylation[4]	Unknown	Vitamin K Dependent Carboxylase and others unknown	Glu-X-X-X-Glu-X-Cys (for Bone Proteins)	Conus Neuotoxins[18]	+43.9898	+44.0098
Dipeptidase[5]	Golgi	Aminopeptidase	N-terminal X-Pro and X-Ala	Substance P[5]	Depends on X	Depends on X
Disulfide bond (not supported)	Rough ER	Various	Two Cys residues	Insulin, Orexin A[19]	-2.01566	-2.01588
Glycosylation N-linked[6]	ER/Golgi	Oligosaccharyl transferase (pH ~7)	Asn-X-Ser/Thr; X not proline, in N-terminal regions	Glycoprotein hormones, FSH, LH, choriogonadotropin, luteinizing hormone[20]	+162.0528	+162.1424
Glycosylation O-linked[7]	ER/Golgi	UDP-N-acetylgalactosamine	Ser/Thr-Pro-Pro-Pro	Proteins that are part of mucosal or the extracellular matrix fluid, Chromogranin A[7]	+162.0528	+162.1424
Hydroxylation of Pro [8]	ER	Prolyl-4-hydroxylase	X-Pro-Gly/Ala	Prodermorphin[8]	+15.9949	+15.9994
Methylation of Glu[9,10]	Unknown	Various Types	Occurs on O-atom of Glu, preferentially at an N-terminal Glu in insects	Pea-sulfakinin[9], Corticotropin[21]	+14.0157	+14.0269

Phosphorylation[1,11] of Ser or Thr	ER/Golgi, follows glycosylation	Casein Kinases (CK)/ Protein Kinase A (PKA)	Ser/Thr-X-Asp/Glu/Asn/Gln; Ser/Thr-X_{1-2}-Ser/Thr; Lys-Arg-X-X-Ser; and Arg-Arg-X-Ser	ACTH, CLIP,[16] Chromogranin A[7]	+79.9663	+79.9799
Pyroglutamylation [12]	Secretory granules (pH 8)/ chromaffin granules	Glutaminyl cyclase	N-terminal Glu or Gln residue	Alpha-MSH[22], sulfakinin[9]	Glu: -18.0106 Gln: -17.0266	Glu: -18.02 Gln: -17.0306
Sulfation[1, 13-15] of Tyr	TGN/ follows glycosylation	Tyrosylprotein sulfotransferase	Asp/Glu-Tyr and >2 acidic residues in +5 to –5 region, 1 Pro or Gly or at least two Asp Ser or Asn in –7 to +7 region, also no disulfide bond or N-linked glycan within –7 to +7 region	Alpha-MSH[22], CCK, gastrin,secretogrranin I &II, Leu-Enk, sulfakinin[9]	+79.9568	+80.0642

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