Supplementary Information

Deciphering the Conformational Landscape of Few Selected Aromatic Noncoded Amino acids (NCAAs) for Applications in Rational Design of Peptide Therapeutics.

Lalita Mohan Behera[1], Manaswini Ghosh[1], Soumendra Rana*[1]

[1]*Chemical Biology Laboratory, School of Basic Sciences, Indian Institute of Technology Bhubaneswar, Odisha 752050, India. Email: soumendra@iitbbs.ac.in*

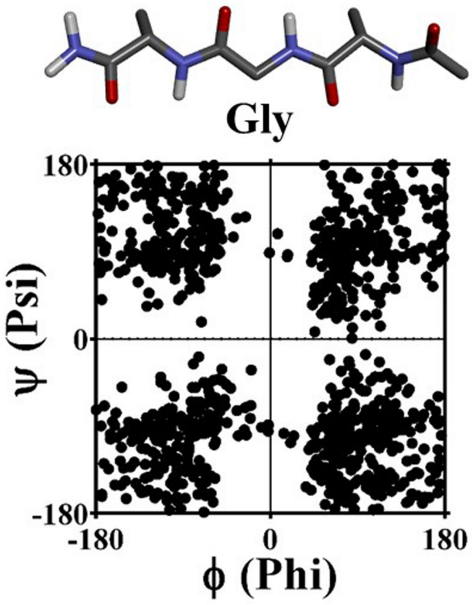

Figure S1. Ramachandran plot illustrating the backbone conformational propensity of Gly in Ac-Ala-Gly-Ala-NH_2 tripeptide obtained from MD over 10 ns at 300K.

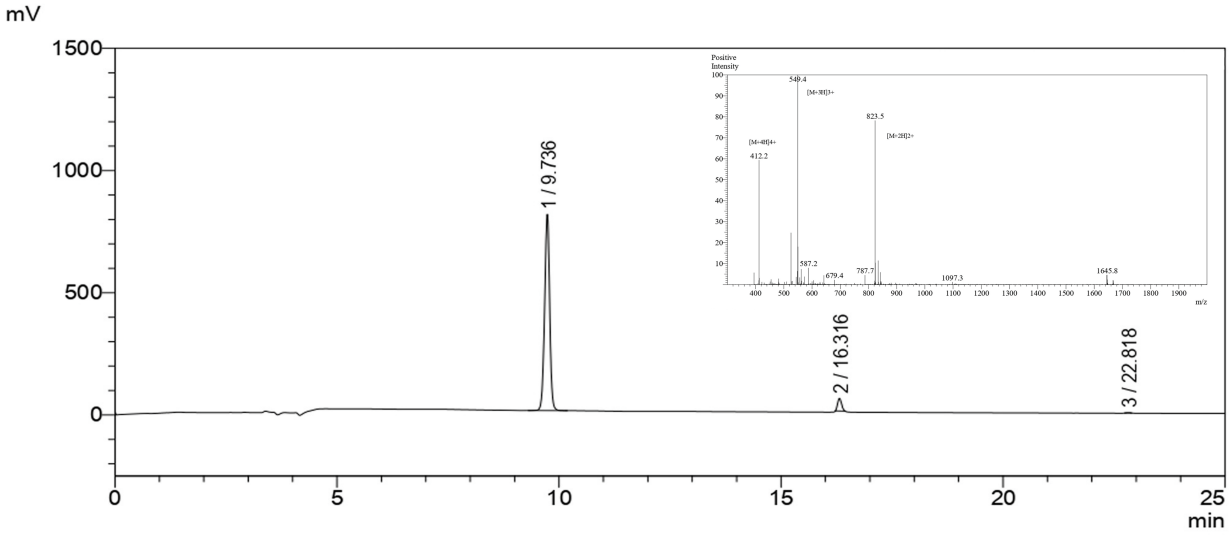

Figure S2. Analytical HPLC profile and the ESI-mass spectra (inset) of the Hed1 peptide.

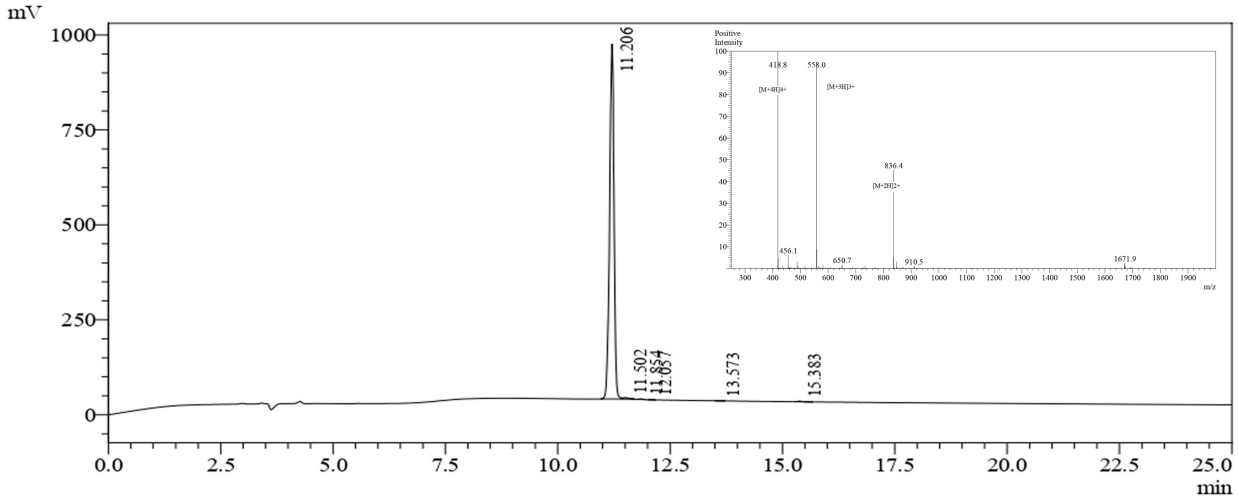

Figure S3. Analytical HPLC profile and the ESI-mass spectra (inset) of the Hed2 peptide.

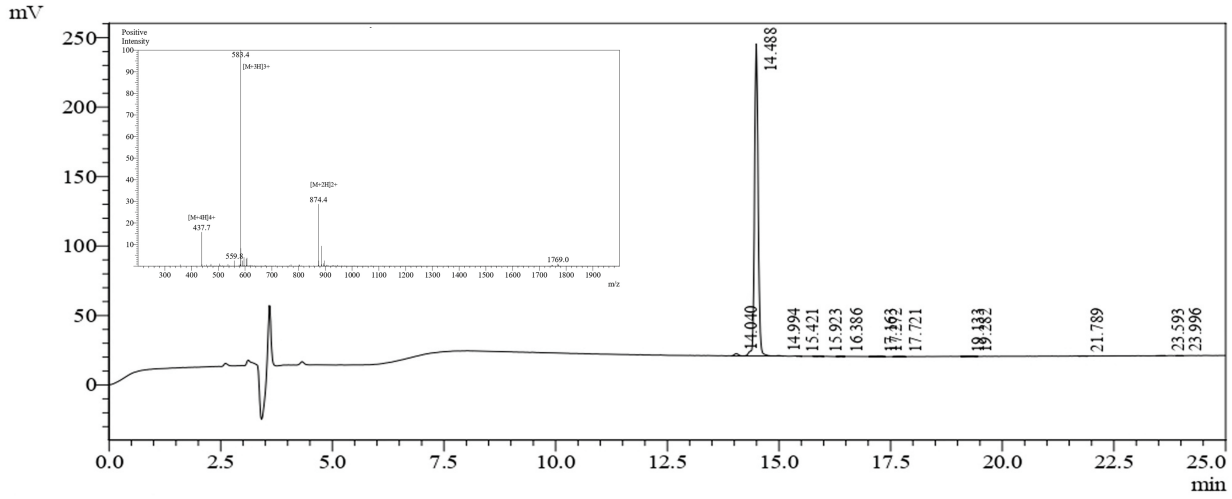

Figure S4. Analytical HPLC profile and the ESI-mass spectra (inset) of the Hed3 peptide.

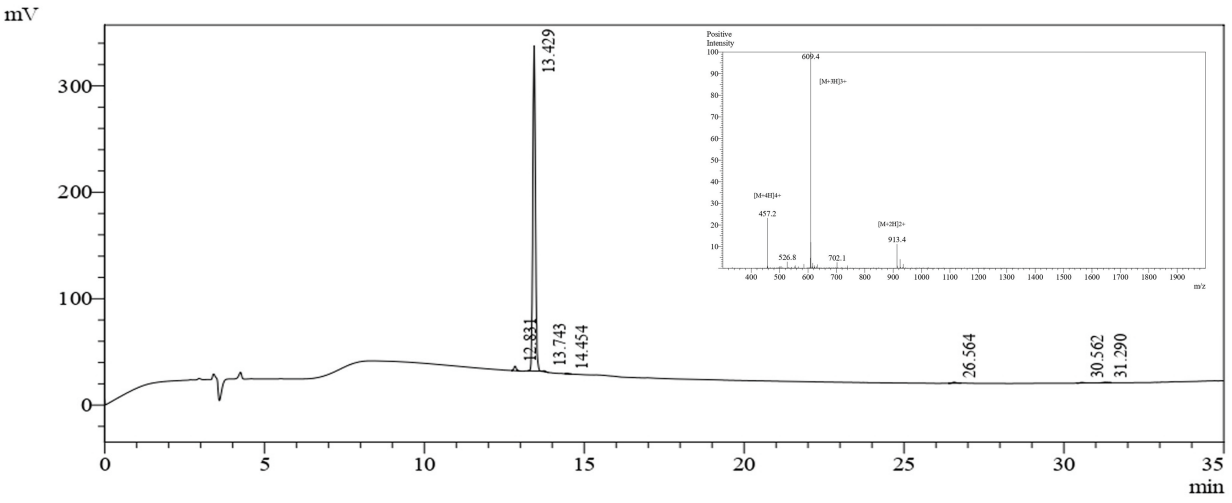

Figure S5. Analytical HPLC profile and the ESI-mass spectra (inset) of the Hed4 peptide.

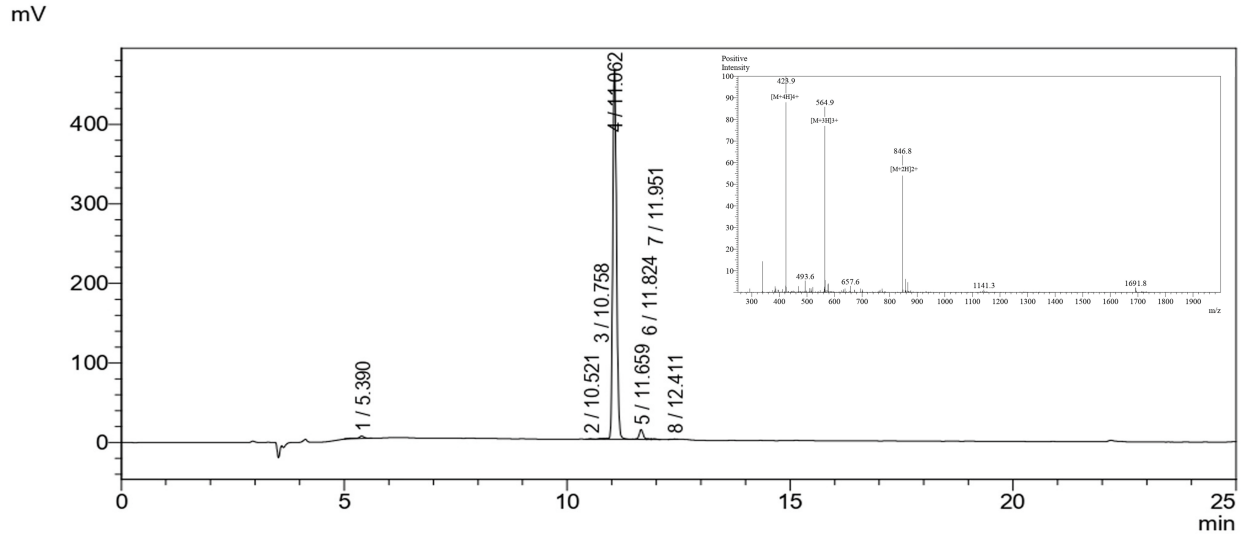

Figure S6. Analytical HPLC profile and the ESI-mass spectra (inset) of the Hed5 peptide.

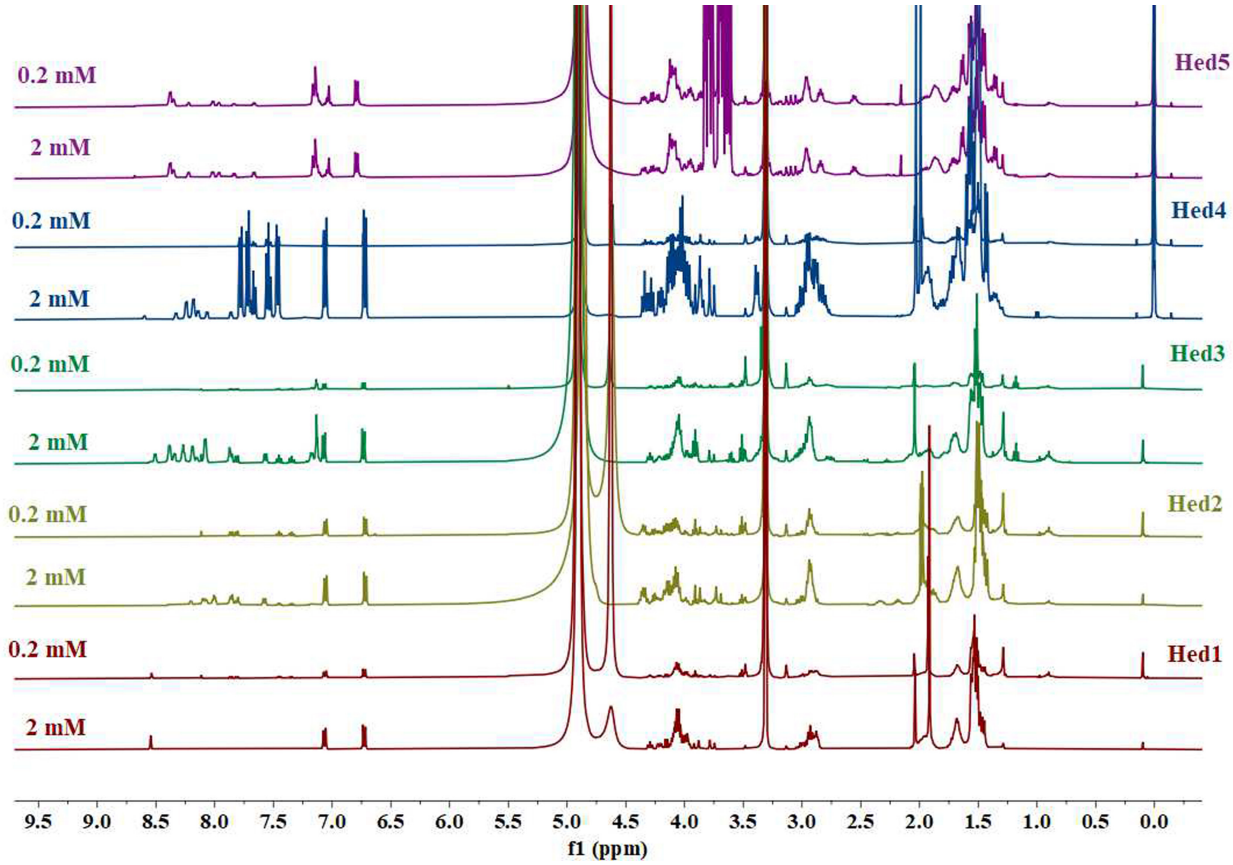

Figure S7. ^{1}H NMR spectra of the Hed1 to Hed5 peptide, respectively recorded at 2 mM and 0.2 mM concentrations in CD_3OD at 298 K.

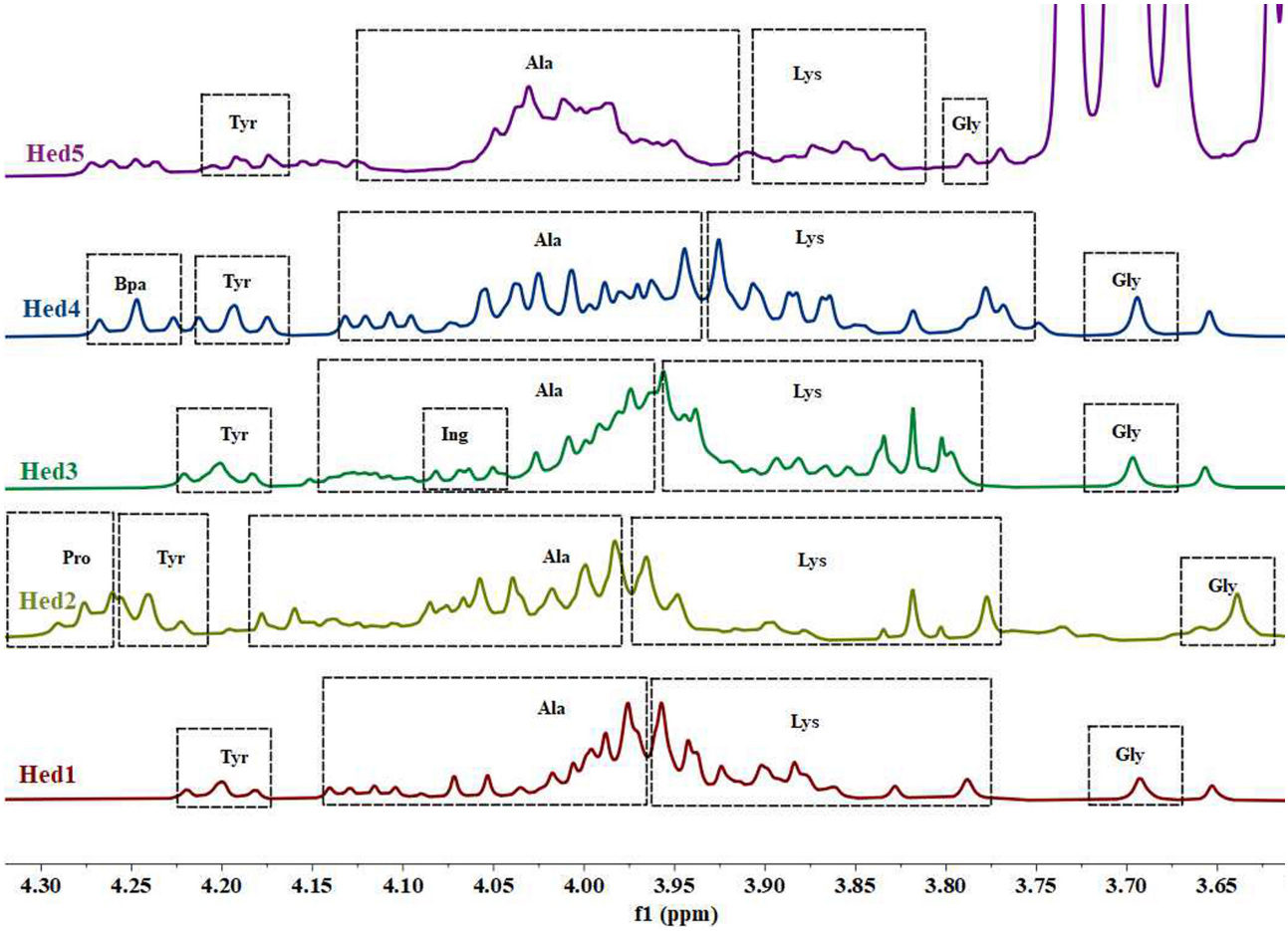

Figure S8. ^{1}H NMR spectra showing the $C_{\alpha}H$ region of the peptides. The dotted boxes indicate different residue regions for each peptide.

Table S1. Percentage helicity of the peptides calculated in the presence of various solvents and cosolvents. The ratio of 222/208 is provided within the parenthesis as an indicator to judge the type of helix populated in the solution.

Solvent	% Helicity and $[\theta]_{MRE}$ 222/$[\theta]_{MRE}$ 208				
	Hed1	**Hed2**	**Hed3**	**Hed4**	**Hed5**
PBS	42 (0.6)	0	27 (0.7)	0	16 (0.6)
Water	28.6 (0.7)	0	20.8 (0.6)	9.4 (0.6)	14.7 (0.6)
Methanol	47.4 (0.7)	28 (0.7)	45.2 (0.7)	11.3 (0.7)	43 (0.7)
20% TFE	42.5 (0.9)	15.7 (0.4)	48.9 (0.8)	12.4 (0.8)	21.3 (1.0)
30% TFE	46.9 (0.8)	24.1 (0.6)	53.4 (0.8)	12.2 (0.9)	20.3 (1)
20% HFIP	62.7 (0.8)	47.6 (0.8)	42.2 (0.8)	11 (0.8)	18 (0.7)
30% HFIP	67 (0.8)	47.5 (0.8)	46.7 (0.8)	14.4 (0.8)	17.9 (1.0)
20mM SDS	46 (0.8)	43.8 (0.9)	43.5 (0.9)	12.9 (1.0)	21.2 (1.0)
30mM SDS	48 (0.8)	44.6 (0.9)	44.6 (0.9)	13.2 (1.1)	27.3 (0.9)