

*Supplementary Information for***Structural Insight of Amyloidogenic Intermediates of Human Insulin**

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Supporting Information

Figure S1: Raman spectrum of human insulin in its solid state.

Figure S2: SDS-PAGE electrophoresis of insulin solutions at the different time point of incubation.

Table S1: Raman vibrational bands (cm^{-1}) of insulin monomer as air dried, solid powder, and in the aqueous solution state.

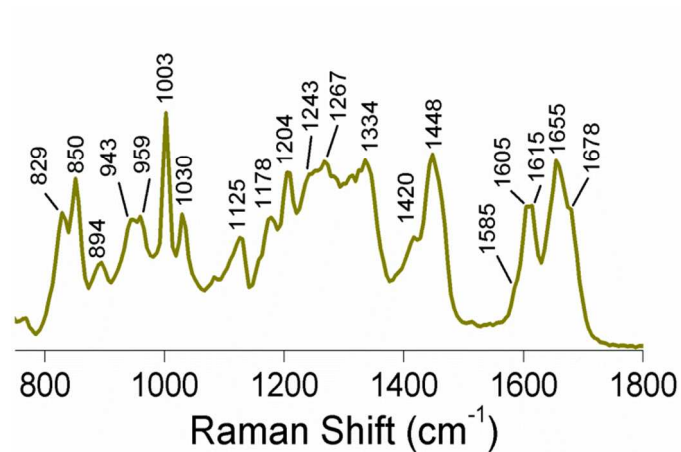


Figure S1. Raman spectrum of human insulin (zinc free) in its solid state. Laser power at source 20 mW, ~ 1 mW at the sample. The same instrument as in the original manuscript was used to record the Raman spectrum.

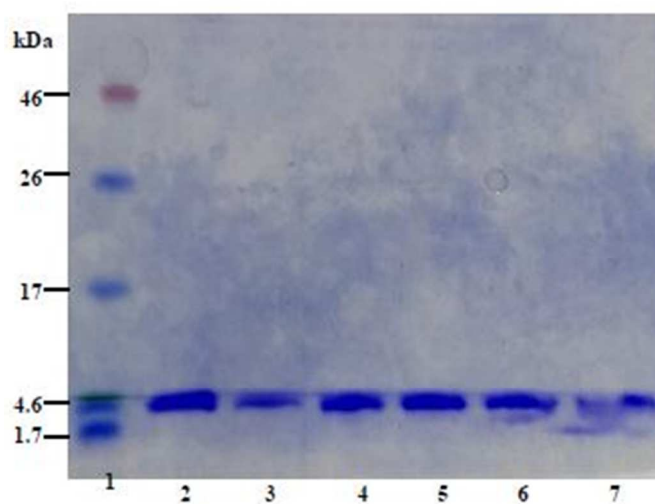


Figure S2. SDS-PAGE electrophoresis of insulin solutions taken at the different time point of incubation. Insulin solution 1.5 mg/ml was incubated at pH 1.8, 60 °C for 3 h. Lane 1: protein marker bands, lanes 2-7 are for insulin incubated for 0, 60, 120, 135, 150, 160 and 180 min, respectively.

Table S1. Raman vibrational bands (cm^{-1}) of insulin monomer as air dried, solid powder, and in the aqueous solution state (from reference ¹).

Air dried	Solid state	Aqueous solution state	Modes of Raman vibration
830	829	830	Tyr
854	850	852	Tyr
898	894	890	C _α -C stretching
940,949	943	945	helix Skeletal, C _α -C stretching
962	959	960	Skeletal beta strand, C _α -C stretching
1004	1003	1003	Phe
1033	1030	1032	Tyr
1130	1125	1130	CH ₂ symmetric rock+ C _α -C stretching
1156,1177	1178	1175	Phe, Tyr
1205	1204	1209	Tyr, Phe
1249	1243	1240	Poly-l-proline, Amide III
1262,1269	1267	1269	α-helix, Amide III
1343	1334	1343	C _α -H deformation, Pure α-helix, Amide III
1421,1449	1448	1446	CH ₂ , CH ₃ & CH deformation and scissoring
1465	-	1460	
1587	-	-	Phe
1605	1605	1608	Phe aromatic vibration
1615	1615	1616	Tyr aromatic vibration
1659	1655	1662	α-helix, Amide I
1676	1678	-	Extended PP II

References

- (1) Yamamoto, S.; Kaminský, J.; Bouř, P. Structure and Vibrational Motion of Insulin from Raman Optical Activity Spectra. *Anal. Chem.* **2012**, *84* (5), 2440–2451.