Title:	Catalytic activity of trypsin in the presence of nucleic acids
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Abstract:	Nucleic acid-binding proteins generally split into two types: those that can bind to DNA and those that can bind to RNA. According to recent reports, these interactions have an impact on essential processes like DNA replication, transcription, and repair, as well as RNA transport, translation, splicing, and silencing. Currently, nucleic acid-binding proteins can be identified and further characterized by several experimental techniques. In this work, we have shown that DNA and RNA can bind to the proteolytic enzyme trypsin which was confirmed by spectroscopic, fluorescent, Gel-electrophoresis, and chromatographic methods. In the presence of nucleic acids, trypsin's catalytic activity is higher than in the absence of nucleic acids with the substrate BApNA (Nα-Benzoyl-L-arginine para—nitroanilide). Further, we chose BSA (Bovine Serum Albumin) as another substrate and confirmed that the catalytic rate of trypsin to cleave BSA is again higher in the presence of nucleic acids. Also, to understand structural change in trypsin during nucleic acid binding, we did CD (Circular dichroism) and observed that there is structural change in only trypsin and trypsin in the presence of DNA due to the interaction between trypsin and nucleic acids. Moreover, this study can be considered a preliminary step to further investigate how interactions between nucleic acids and proteins or peptides can influence the formation of biomolecular condensates in living cells.
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