Metal ion porphyrin inhibition of mutant huntingtin aggregation under photoirradiation

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Huntington's disease is a genetic neurodegenerative disorder which is linked to a polyglutamine expansion in the first exon region of huntingtin protein. Polyglutamine expansion, over 36 repeats, may lead to Huntington's disease[1-2]. Many studies suggest that misfolding of huntingtin (htt) exon 1 peptide plays a crucial role in the aggregation process which is associated with the pathogenesis of Huntington's disease[3]. Thus, in order to explore the mechanism of this disease, designed photo-excited metal ion porphyrin is used to inhibit the aggregation of htt exon 1, which may help to explore the pathogenic mechanism of htt. We used circular dichroism (CD), atomic force microscopy (AFM), attenuated total reflection fourier transformed infrared spectroscopy (ATR-FTIR) and protein electrophoresis gel to obtain the secondary structure and morphological change of htt(Q9) peptide with metal ion porphyrin under photoirradiation. The morphology of htt(Q9) was changed to oligomers from fibrils under neutral condition. Then, electronic paramagnetic resonance spectrometer was used to explore the inhibitory action of photo-excited metal ion porphyrin on htt(Q9) aggregation.

References:

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