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Transthyretin: Some physiological and pathological aspects

Vieira A

Simon Fraser University, Canada

Abstract

The protein transthyretin (formerly, prealbumin) has multiple physiological roles, e.g., in the extracellular transport of thyroid hormones and other compounds, and through its association with other proteins including retinol-binding protein. Misfolded and aggregated transthyretins can have pathological properties and contribute to amyloidogenic diseases including neurodegeneration in hereditary disorders such as amyloidic polyneuropathy. A comparative analysis will be presented based on the results of our studies in terms of (i) the basic biology of transthyretin, e.g., receptor-mediated endocytic transport, (ii) the toxicity of misfolded/ aggregated transthyretins, e.g., disruption of cell membranes and redox balance, and (iii) the moderation of such toxicity by pharmacological compounds including phytochemicals. The presentation will also include biophysical and bioinformatics analyses of transthyretins and other amyloidogenic proteins in an attempt to relate protein structural changes to misfolding/ aggregation and, ultimately, to toxicity and disease.