

## Abstract

Transthyretin (TTR), one of the major three thyroid hormone-binding proteins found in plasma and cerebrospinal fluid of human. It is a homotetrameric of 127 amino acids subunit. The extensive  $\beta$ -sheet structure of the protein led to susceptibility of the TTR to form an amyloid fibril. Majority of the TTR-associated amyloidoses is due to single amino-acid substitutions, found in Familial amyloidotic polyneuropathy (FAP) and senile systemic amyloidosis (SSA). Up to 80 different mutation of the TTR genes are identified and have been insight studied in many approaches. However, further investigations at the molecular/structural levels are still essential. Synthesis of recombinant human wild type TTR and its variants, Gly6Ser, Leu55Pro and Val30Gly, was first attempted in a methylotrophic yeast, *Pichia pastoris*, with aiming to obtain sufficient amount of the proteins for further studied. The recombinant TTRs were successfully synthesized with moderate secretion level at 1-2 mg per liter of 96-h culture using the pPIC 3.5 expression vector. The proteins showed physico-chemical properties, as well as capability in binding to thyroid hormones, similarly to those of the native TTR. Characteristic in binding of Congo red to the amyloid fibrils was reported for the recombinant human TTR variants.