

The Allergenic Non-specific Lipid Transfer Protein from Peach: Structural Studies

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A large number of proteins can bind small molecules with a poor solubility in water. The function of many of these proteins is to transport small molecules which would not be soluble in the biological environment. The ligands often present a strong lipophilic characters, as, for example, retinoids and fatty acids. In addition to the well known calycins, this group of protein includes the so-called non-specific lipid transfer proteins (*ns*-LTPs). They are plant proteins of about 9 kDa molecular mass, and they bind fatty acids, steroids and other types of lipids. However, their function has not been precisely defined as yet [1].

Our study is focused on the determination of the three dimensional structure of peach *ns*-LTP. Recently, several biological and medical studies have stimulated interest in the *ns*-LTP from peach. This protein, like others *ns*-LTPs, binds fatty acids, but it has been also identified as an important food allergen [2].

Despite its strong sequence similarity with others *ns*-LTPs whose structure is already known [3], its crystal structure determination was not straightforward. It required the measurement of synchrotron anomalous data with enhanced sulphur f'' by using a synchrotron X-ray wavelength of 2Å from SRS MPW beamline 10. In addition a stronger $\langle I/\sigma(I) \rangle$ was then achieved using the APS undulator at SBC CAT. The molecular model is a single compact domain, made up by four α -helices, which form a hydrophobic pocket where the lipid is bound. The 3-D structure is strongly stabilized by four disulphide bridges. Possible immunogenic epitopes associated with the allergenic reaction will be proposed by this study.

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