Our investigation was focused on a secondary protein structure called polyproline I. This helical structure has been known for a long time, but its occurrence and significance in nature is not yet fully known. In this thesis, we use Raman spectroscopy and chiral sensitive Raman optical activity. These methods are sensitive to the structure of proteins but are more informative and sensitive to the local arrangement than the commonly used ECD and UV absorption. We were able to obtain polyproline I Raman and ROA spectra that have not yet been published. We have described important differences between the spectra of polyproline I and II and observed the process of mutarotation. The experimental part of the work is supplemented by quantum chemistry calculations of spectra using the transfer of molecular property tensor. The calculated spectra corresponded very well with the experimental spectra.