Regulatory requirements regarding documentation of chiral drugs have been increased during recent years. Today, a new drug application of a chiral drug normally contains pharmacodynamic, pharmacokinetic and toxicological documentation on the individual enantiomers even if it is the racemate that is considered for therapeutic use. This additional documentation is time consuming and increases the cost for drug development. It might, therefore, be advantageous to aim for the development of achiral drugs. However, in drug discovery research, chiral drugs may offer certain advantages; provided that enantiopure compounds are studied, chiral molecules will provide much more information about receptor/enzyme - ligand substrate interactions than achiral analogues. In addition, recently developed synthetic methods affording enantiopure compounds and analytical methods for quantifying enantiopurity are available. Several examples will be given demonstrating that enantiopure ligands have provided essential information on the therapeutic use. This additional documentation is time consuming and increases the cost for drug development. It might, therefore, be advantageous to aim for the development of achiral drugs. However, in drug discovery research, chiral drugs may offer certain advantages; provided that enantiopure compounds are studied, chiral molecules will provide much more information about receptor/enzyme - ligand substrate interactions than achiral analogues. In addition, recently developed synthetic methods affording enantiopure compounds and analytical methods for quantifying enantiopurity are available. Several examples will be given demonstrating that enantiopure ligands have provided essential information on the molecular basis for activation of G-protein coupled receptors. It is of particular interest that the chirality of a receptor ligand may be used to fine-tune the pharmacological profile.

Nonlinear optical (NLO) materials designed for second-harmonic generation (SHG) are governed by two symmetry related requirements. They are: (i) the molecule must not possess a center of symmetry; and (ii) the crystal packing arrangement must not be monoclinic. If either condition is not met the material becomes SHG-inactive. As well, electrostatic forces between adjacent, highly polar molecules often causes them to pack in an anti-parallel (head-to-tail) fashion, decreasing the bulk nonlinearity. The introduction of chirality satisfies both symmetry conditions; however this does not ensure that the NLO chromophores will orient themselves inside the unit cell so as to produce SHG efficiently. Derivatives of p-nitroaniline and 2,4-dinitroaniline (NLO materials that are SHG-inactive) with the amino acid glycine have become significantly SHG-active. X-ray crystal structures of both acids and ten of the twelve salts reveal that hydrogen bonding and shielding from the counterion play important roles in discouraging the NLO chromophores from packing in the inefficient head-to-tail fashion described above.

The compound crystallized in the orthorhombic system (Pemb) with two both molecules is the conformation of the cyclooctyl. The T' have structural similarity to NPP, PNP and COANP, in all compounds the aromatic ring is essentially planar. An analysis of seminormal probability indicate that the big difference between monomeric molecules in the asymmetric unit.

References: