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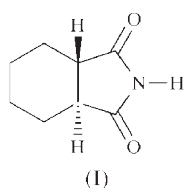
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The molecule of the title compound, C₈H₁₁NO₂, contains a strained bicyclic system with a significantly twisted imide chromophore. The five-membered ring fragment containing the imide function is strongly puckered and adopts a half-chair conformation. The six-membered ring has a slightly distorted chair conformation. The molecules are joined by strong N—H···O and weak C—H···O hydrogen bonds into infinite chains.

Comment

The title compound, (I), can be considered as an example of a strongly twisted succinimide moiety and imide chromophore as a result of *trans*-fusion of the six- and five-membered rings. Compound (I) was synthesized, together with some optically active succinic anhydrides and imides of known absolute configuration, in order to study the chiro-optical properties of five-membered ring compounds with C₂ and C_{2v} local symmetry of the chromophores (Połowski, 1988).

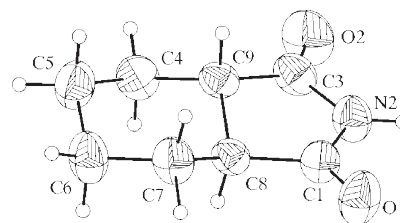
It has been shown that twisting of the chromophores profoundly influences the circular dichroism spectra of cyclic anhydrides and imides (Połowski, 1988; Połowski *et al.*, 1993). Since the molecular geometry parameters of (I) were known only from semi-empirical MNDO (modified neglect of diatomic overlap) calculations (Połowski *et al.*, 1993), we decided to determine the structure of the *S,S*-enantiomer of (I) by single-crystal X-ray analysis, and we present the results of this analysis here.



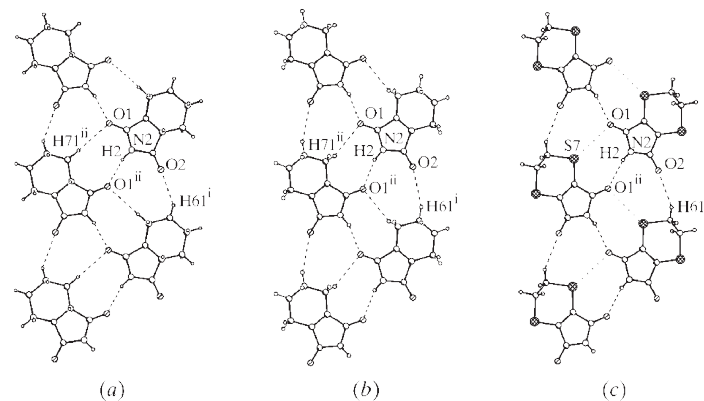
A view of the molecule of (I) with the atom-labelling scheme is shown in Fig. 1 and torsion angles are given in

Table 1. A search of the Cambridge Structural Database (CSD, Version 5.23; Allen & Kennard, 1993) revealed that monocyclic as well as bicyclic succinimide and dithiosuccinimide derivatives exhibit various degrees of puckering of the five-membered ring, with the puckering amplitude (Cremer & Pople, 1975) being as high as 0.269 Å in tetramethyldithiosuccinimide (CSD refcode NINTAF; Ratajczak-Sitarz *et al.*, 1996) or 0.285 Å in 1,6-dimethyl-8-hydroxy-8-azabicyclo[4.3.0]nonane-7,9-dione (CSD refcode DENVAT; Hengjin *et al.*, 1985), and only 0.021 Å in succinimide (Fronczek, 1995). The puckering of the succinimide fragment of (I) is very similar to that of NINTAF and DENVAT, with a puckering amplitude of 0.289 (2) Å and a phase angle of 268.6 (4)° (266.8 and 272.5° for NINTAF and DENVAT, respectively), indicating a half-chair conformation of the five-membered ring. The six-membered ring has a slightly distorted chair conformation, with absolute values of the endocyclic torsion angles in the range 53.0 (2)–65.4 (2)°.

Molecules of (I) are connected into infinite polar chains in the crystal *via* a strong N2—H2···O1(*y* − 1, *x*, −*z*) hydrogen bond and two weak C—H···O interactions (Table 2). There is a striking similarity between the one-dimensional aggregate structure of this chiral imide and the one-dimensional networks formed by the achiral molecules of 3,6-dithia-3,4,5,6-tetrahydrophthalimide (DTTHP; Kirfel *et al.*, 1975) and 3,4,5,6-tetrahydrophthalimide (THP; Kirfel, 1975) (Fig. 2).

**Figure 1**

A view of the structure of (I) with 50% probability displacement ellipsoids. H atoms are shown as small spheres of arbitrary radii.

**Figure 2**

A comparison of the one-dimensional hydrogen-bonded networks in the crystal structures of hydrogenated phthalimide derivatives with approximately flat condensed ring systems: (a) (I) [symmetry codes: (i) *x* − 1, *y* − 1, *z*; (ii) *y* − 1, *x*, −*z*], (b) THP [symmetry codes: (i) *x*, *y*, 1 + *z*; (ii) *x*, −1 − *y*, $\frac{1}{2}$ + *z*], and (c) DTTHP [symmetry codes: (i) *x*, *y*, 1 + *z*; (ii) *x*, $-\frac{1}{2}$ − *y*, $\frac{1}{2}$ + *z*].