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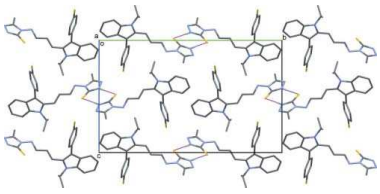
The title compound, $C_{23}H_{22}FN_5S$, exists in a trans conformation with respect to the methene C═C and the acyclic N═C bonds. The 1,2,4-triazole-5(4H)-thione ring makes dihedral angles of 88.66 (9) and 84.51 (10)□, respectively, with the indole and benzene rings. In the crystal, molecules are linked by pairs of N—H□□S hydrogen bonds, forming inversion dimers with an $R_2^2(8)$ ring motif. The dimers are linked via C—H□□□ interactions, forming chains along [1$\bar{1}$0]. The chains are linked via □—□ interactions involving inversion-related triazole rings [centroid–centroid distance = 3.4340 (13) Å], forming layers parallel to the ab plane.

1. Chemical context

The synthesis and functionalization of indoles has been a major area of focus for researchers for several decades. Indoles are of great importance in view of their natural occurrence as a prominent sub-structure of a large number of alkaloids (Somei & Yamada, 2003; Hibino & Choshi, 2002) and wide-ranging biological activities (Gribble, 1995). They also constitute an important moiety of various drugs. In addition, 1,2,4-triazoles are an important class of heterocyclic compounds which are well known for their potential antimicrobial properties. Substituted 1,2,4-triazoles are associated with diverse biological activities such as fungicidal, antimicrobial, anticonvulsant and antiviral activities (Walser et al., 1991; Eweiss et al., 1986; Bhat et al., 2001; Kitazaki et al., 1996; Todoulou et al., 1994). The proper design of indoles and triazoles can be used to prepare Schiff bases. The wide spectrum of biological applications of 1,2,4-triazoles prompted us to synthesize Schiff bases derived from triazole and indole derivatives. The formation of the azomethine functional group CH═N is thought to be the main reason for the biological properties of Schiff bases. We have reported a number of metal complexes of Schiff bases, recently, which possess very good antimicrobial properties (Kulkarni et al., 2009a,b, 2011).



2. Structural commentary

The title compound, Fig. 1, exists in a trans conformations with respect to the methene C9═C10 [1.322 (2) Å] and acyclic N2═C11 bonds [1.278 (2) Å]. The triazole ring is almost planar [maximum deviation of 0.011 (2) Å for atom C13], as is the indole ring [maximum deviation of 0.031 (2) Å for atom