CRYSTAL STRUCTURE of N-(2-PYRIDIL)-2-HYDROXY-1-NAPHTHALDIMINE

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2-Hydroxybenzalaldimines and 2-hydroxonaphtaldimines are of interest mainly due to the existence of O—H...N type hydrogen bonds and a tautomism between imino and amine forms. In these compounds, short hydrogen bonds between the 2-hydroxy group and the imino nitrogen is observed. In some instances the hydrogen from the -OH group is completely transferred to the imino nitrogen. In other words, phenol imine o keto amine equilibrium shifts predominantly to the keto imine side. This is particularly so in those Schiff bases that bear basic groups on the amine moiety. The physical state of the compound also effects the type of dominant tautomeric form.

We report here the synthesis and the crystal structure of the Schiff base formed by 2-aminopyridine and 2-hydroxy-1-naphthaldehyde to permit a comparison of the hydrogen bonding and tautomerism with those of the related compounds. As can be seen from Fig. 1. The asymmetric unit has both the tautomeric forms at 50% abundance in crystal state.

In the title compound the asymmetric unit cell contains two independent molecules of (C₁₆H₁₉N₂O) which constitute a tautomeric pair. The observed differences in the related ON [1.317(4) and 1.330(4) Å] and C=O [1.279(4) and 1.263(4) Å] bond lengths in the two crystallographically independent molecules indicate that imine and amine forms coexist in the solid state. Intramolecular hydrogen bond lengths between N...O are 2.586(4) and 2.518(4) Å for the individual tautomers.

Elemental analysis, NMR- and IR- data are also discussed.

Figure 1.

References