03.3-02 THE CRYSTAL AND MOLECULAR STRUCTURE OF AN α-ADRENERGIC AGONIST-NAPHAZOLINE HYDROCHLORIDE. By A.Podder, J.K.Dattagupta and N.N.Saha, Saha Institute of Nuclear Physics, 92 A.P.C. Road, Calcutta-700009, India.

Naphazoline, a sympathomimetic drug, is well known for its cardiovascular action though it is chiefly used as a nasal and ocular decongestant. Naphazoline exhibits many of the pharmacological actions of epinephrine, a typical sympathomimetic amine, but it differs considerably from the conventional structure of such a biogenic amine. Here the ethylamine side chain becomes a part of a heterocyclic ring and is attached to a fused benzene ring.

Naphazoline hydrochloride ($C_{14}H_{14}N_2.HCl$) crystallises in monoclinic space group $P2_1/c$ with 4 molecules per unit cell of dimensions a=11·937,b=9·297,c=12·843 Å, β=117·1°. The structure has been solved by direct methods and refined to an R value of 0·11 by block-diagonal least-squares method using 1987 independent reflections collected on a STOE diffractometer. The conformation of the molecule is markedly different from the preferred one usually adopted by similar biologically active amines. The side chain is approximately in the plane of the phenyl ring (τ_1=178°) and is in folded form (τ_2=92°). The distance of the protonated nitrogen atom from the centre of the benzene ring is 4·5 Å which is less than the characteristic value of 5·1 to 5·2 Å obtained for most of the sympathomimetic amines. The crystal structure is stabilized by N-H...Cl type of hydrogen bonds that link the molecules into continuous chains parallel to b axis.

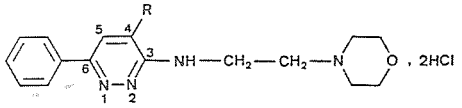
03.3-03 THE CRYSTAL AND MOLECULAR STRUCTURE OF PYRAZINE-2-CARBOXYAMIDE. By R. K. Tiwari, T. C. Patel and T. P. Singh, Department of Physics, Sardar Patel University, Vallabh Vidyanagar 388 120, India.

Pyrazine-2-carboxyamide is a well known anti-tuberculosis drug. The compound crystallizes in the monoclinic space group $P2_{1/c}$ with four molecules in the unit cell of dimensions a = 3.73 (1), b = 6.76 (2), c = 22.76 (3) Å and β = 101.1 (5)°. The structure has been determined by symbolic addition procedure using visual data and refined to an R value of 0.010 for all the observed reflexions.

There are significant fluctuations among the C-N and C-C bond lengths in the pyrazine ring. These may presumably be due to the effect of conjugation with the amide group. The atoms in the amide group deviate considerably from the plane of the pyrazine ring, and the angle between the planes of the ring and the amide group is 5.6°. This slight tilt of amide group from the ring plane seems to be due to the effects of the hydrogen bonding and other intermolecular interactions. The structure is stabilized by a network of hydrogen bonds and van der Waals interactions.

03.3-04 CRYSTAL AND MOLECULAR STRUCTURES OF SEVERAL MORPHOLINO ETHYLAMINO PYRIDAZINES. By G. Evrard, A. Michel and F. Durant, Laboratoire de Chimie Moléculaire Structurale, Facultés Universitaires de Namur, 61, rue de Bruxelles, B-5000 - Namur, Belgium.

3-[N-(2'-N'-morpholino)ethylamino] 4-methyl-6-phenyl pyridazine (Minaprine ; commercial name CANTOR -Clin Midy, France) and several 4-substituted pyridazine derivatives display psychotropic activity. Single-crystal X-ray analyses have been undertaken in an attempt to correlate their structural features with their pharmacological properties. We report here the results of those analyses and structural comparison for several free bases and hydrochloric acid salts.



Structural properties of these molecules are discussed particularly :
- electronic delocalization in the aminopyridazine moiety versus intramolecular bond lengths and molecular geometry ;
- basicity of nitrogen atoms of the heteroatomic rings and their contributions to hydrogen bonds ;
- torsion angles between aromatic rings in terms of internal electronic stabilization and intermolecular interactions.

All the results obtained from the various analogues are consistent and suggest the following scheme of resonance for the aminopyridazinium group: