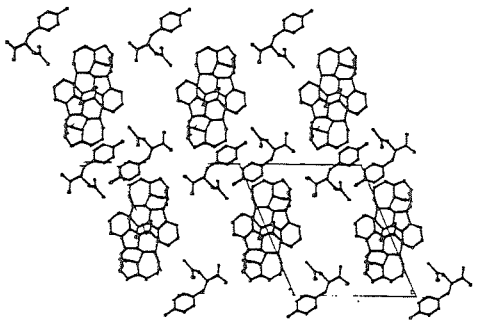
into the extended binding site of PPE and the models subjected to force-field refinement and evaluation. The PPE+PAPY complex may provide proof of the reaction mechanism for serine proteases involving amide N atom inversion (R to S) at the scissile bond. Although we are still evaluating these methods, they surely should be incorporated into a drug-design methodology at the molecular level.

Because of the structural (and functional) homology exhibited by the serine proteases, we have extended modelling methodologies to permit us to predict the tertiary structures of analogous elastases(rat I=84% homologous, rat II=58%, with one insertion). The novel aspects of our method include the inclusion of conserved molecules of hydration and the refinement of graphics generated models by means of force-field calculations. As these methods too should be part of drug design efforts, they will be discussed, together with the results they have yielded. As appropriate, a motion-picture film will be shown to illustrate these various techniques.

We acknowledge Prof.R.Huber, Dr.W.Bode, Dr.M.Zimmerman, Prof.J.Powers, Dr.E.Czerwinski, Dr.R.MacDonald Prof.A.McCammon, the Robert.A.Welch Foundation, the Petrolium Research Fund, and the Texas Agricultural Experiment Station.

03.4–9 A CRYSTAL COMPLEX OF STRYCHNINE AND N-ACETYL-L-TYROSINE. By S.B.B. Glover, R.O. Gould and M.D. Walkinshaw, Chemistry Department University of Edinburgh, EH9 3JJ, U.K.

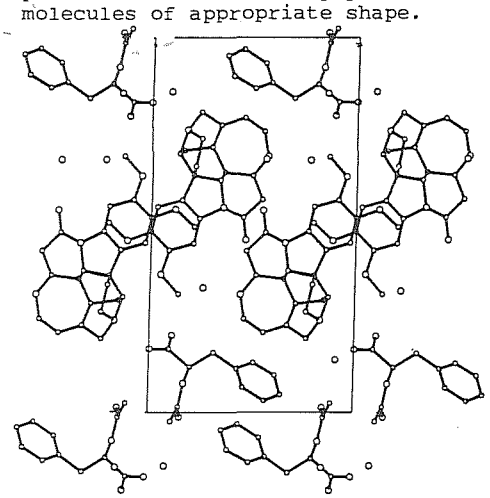
Strychnine is less used as an agent to resolve racemates than is brucine, an alkaloid similar except for two -OMe substituents on the indole ring. This difference affects the packing of their salts profoundly. Strychnine salts form alkaloid bilayers separated by solvent sheets, with rather restricted "holes" for guest molecules. An interesting example is the salt of strychnine with N-acetyl-L-tyrosine. It crystallises in space group $P2_1$ with $a = 16.544$, $b = 7.866$, $c = 15.384$ Å, $\beta = 115.71^\circ$. The diagram shows the b projection of the ordered strychnine moieties with one of two alternative tyrosine arrangements, each having 50% site occupancy. The alternative positions and their differing hydrogen bonding will be discussed.



03.4–10 TWO BRUCINE-AMINO ACID COMPLEXES. By R.O. Gould, P. Taylor and M.D. Walkinshaw, Chemistry Department, University of Edinburgh, Edinburgh EH9 3JJ, U.K.

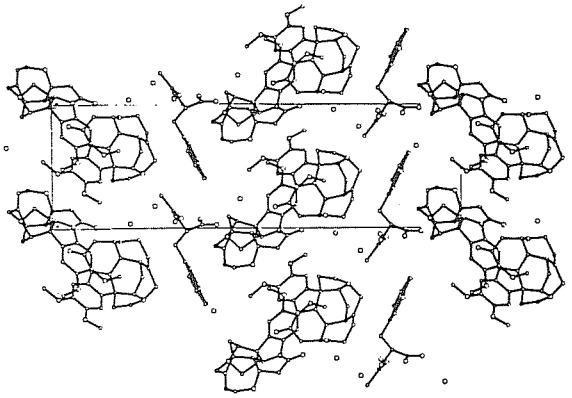
Brucine is widely used in the resolution of racemates of N-protected amino acids. We are undertaking a systematic study of such peptide alkaloid complexes in order to explain the preferential co-crystallisation of D- or L- forms.

Brucinium N-acetyl-D-phenylalaninate . $4H_2O$ (A) crystallises in space group $P2_1$ with $a = 11.080$, $b = 7.526$, $c = 20.137$Å, $\beta = 91.24^\circ$. The main packing feature is the corrugated monolayer sheets of brucine normal to the c-axis which provide cavities to trap preferentially chiral molecules of appropriate shape.



b-axis projection of A

A more unusual situation is illustrated by the 2:1 adduct of brucine with N-acetyl-L-tryptophan. Brucinium N-acetyl-L-tryptophanate . brucine . $5H_2O$ (B) is monoclinic, $P2_1$, with $a = 9.573$, $b = 31.775$, $c = 9.173$Å, $\beta = 97.96^\circ$. Like A, B shows the conserved, corrugated monolayer of brucine, although in B one of the crystallographically independent brucine moieties is cationic, the other neutral.



c-axis projection of B

Both structures were solved using the DIRDIF procedure, linked with a Patterson orientation search, techniques ideally suited to crystals containing large, rigid groups. The solution of the structures and their hydrogen bonding will be presented.