Mitomycins are very important group of antitumor compounds, and mitomycin C, a prominent member of them, is clinically used extensively and successfully today. Tulinsky et al. (J. Am. Chem. Soc., 1967, 89, 2905) and Yamada et al. (J. Antibiot., 1975, 29, 1545; ibid., 1978, 31, 253) disclosed the absolute configurations of mitomycins A and B, respectively, by X-ray analysis. The results, however, are inconsistent with those predicted from the biosynthetic studies on the antibiotic. In addition, it seems that the both analyses are not necessarily decisive from the crytallographic points of view. Therefore, we have reinvestigated the absolute configurations of mitomycins A, B, and C by X-ray analysis. Their crystallographic data are as follows: (A) α-D-3-p-bromobenzoylamino-2,2-dichloro-3,4-dihydroxybenzyl] acetamide, space group P1,213, α=29.183, β=97.27°, γ=97.2, a=9.251, b=9.396, c=12.64, Z=8; X-ray intensities were measured by automatic diffractometry. All structures were solved by direct methods and refined by full-matrix least-squares techniques. Final R factors are as follows: (A) 0.047, (B) 0.057, and (C) 0.036. The expected distortion in the benzene nucleus consequent to the substitution of electron releasing and withdrawing groups is thought to be responsible for the substitution of electron releasing and withdrawing groups.

When a substance can exist in more than one crystalline state it is said to exhibit polymorphism. While the subject of polymorphism is extensively covered in the scientific literature, there are relatively fewer reports regarding its importance in the area of pharmaceutics. The polymorphic forms of a drug substance may differ significantly with respect to certain physicochemical properties; for example, crystal shape, colour density, melting point, hardness, dissolution rate, and pseudopolymorphism (formation of hydrates). The methods for studying polymorphisms were x-ray diffraction, infrared spectroscopy, differential scanning calorimetry, thermogravimetry, electron microscopy and the hot stage polarizing microscopy. The results of investigation on polymorphism and pseudopolymorphism (formation of hydrates) of different drug substances are presented.

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