Shao-Hua Liu*, Mi Tang, Li-Hua Cheng and Shi-Gang Shen

Crystal structure of 2-(4-(dimethylamino)-2-fluorophenyl)-1,3-bis(1H-1,2,4-triazol-1-yl) propan-2-ol monohydrate, C\textsubscript{15}H\textsubscript{20}FN\textsubscript{7}O\textsubscript{2}

Table 1: Data collection and handling.

| Crystal: | Colourless block |
| Size: | 0.28 × 0.22 × 0.18 mm |
| Wavelength: | Mo Kα radiation (0.71073 Å) |
| \(\mu\): | 1.1 cm\textsuperscript{-1} |
| Diffractometer, scan mode: | Bruker APEX-II, \(\varphi\) and \(\omega\) 2\(\theta\)max, completeness: 50\(^\circ\), 98.4\% |
| \(N(hkl)\)measured, \(N(hkl)\)unique, \(R_{int}\): | 4390, 2838, 0.024 |
| Criterion for \(I_{obs}\), \(N(hkl)\)gt: | \(I_{obs} > 2 \sigma(I_{obs})\), 1857 |
| \(N(param)\)refined: | 229 |
| Programs: | DIAMOND [1], SHELX [2], Bruker programs [3] |

Source of material
Fluconazole (C\textsubscript{13}H\textsubscript{12}F\textsubscript{2}N\textsubscript{6}O, 20 mg) was dissolved in a water and DMF (v:v = 4:1, 5 mL) solution. Then the solution was transferred to a Teflon-lined stainless vessel and heated to 313 K for 72 h. It was then cooled to room temperature at a rate of 1 K/h to afford colorless block crystals of the title compound in ca. 30% yield.

Comment
Fluconazole (C\textsubscript{13}H\textsubscript{12}F\textsubscript{2}N\textsubscript{6}O, 2-(2,4-difluorophenyl)-1,3-bis(1,2,4-triazol-1-yl)-propan-2-ol, a good antifungal agent, has been effectively applied in clinical treatment and also plays a great role in preventing the opportunistic fungal infections for HIV patients [4, 5]. In order to enhance fluconazole’s biomedical application, numerous research groups have been engaged in new polymorphs of fluconazole, which resulted in the formation of several polymorphs,
salts, solvates and cocrys[a]ls [6, 7]. In this context, we
initial the solvothermal treatment of fluconazole in water
and DMF solution. An unexpected crystalline product
resulting from the SnAr reaction of the aryl fluoride, namely
2-(4-(dimethylamino)-2-fluorophenyl)-1,3-bis(1H,1,2,4-triazol-1-yl)propan-2-ol monohydrate (C₉H₁₅FN₂O₂), was obtained
and characterized by X-ray single-crystal diffraction.

In the asymmetric unit, there is one 2-(4-(dimethyl-
amino)-2-fluorophenyl)-1,3-bis(1H,1,2,4-triazol-1-yl)propan-2-
ol and a water molecule. The torsion angles of C2–C1–C7–O1,
C7–C8–N1–N2 and C7–C11–N4–N5 are 174.8(2), −99.3(2),
and −138.2(2), respectively. The dihedral angles between
the aryl ring and the triazole rings are 26.0(1) and 68.5(1)°,
respectively. Two terminal pyridyl rings make a dihedral angle
of 68.0(1)° with each other. In contrast to the polymorphs
of fluconazole [7], the title compound has not been found
to form a dimer. The resultant hydrogen-bonding array is
an infinite waving tape built by the O–H···O and O–H···N
interactions between the host substituted fluconazole and
the water molecule. Weak π···π interactions have to be
taken into account, to construct the final 3D supramolecular
arrangement.

References

Bonn, Germany, 2005.
3. Bruker. SADABS, SMART and SAINT. Bruker AXS Inc., Madison,
Wisconsin, USA, 2007.
5. Caira, M. R.; Alkhamis, K. A.; Obaidat, R. M.: Preparation and
crystal characterization of a polymorph, a monohydrate, and an
ethyl acetate solvate of the antifungal fluconazole. J. Pharm. Sci.
6. Kastelic, J.; Hodnik, Z.; Sket, P.; Plavec, J.; Lah, N.; Leban,
I.; Pajk, M.; Planinek, O; Kikeli, D.; Fluconazole cocrys[a]ls
4943–4953.