Poster

Structures and biological properties of mono- and bis-pseudopurines

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Cyclin-dependent kinases (CDKs) belong to the serine/threonine kinases with fundamental role in the control of the cell cycle and/or proliferation and transcription [1]. Over the past two decades, several CDK inhibitors have been developed as potential cancer therapeutics, and have been tested in numerous clinical trials for several tumor types. Purine-based CDK inhibitor roscovitine [CY-202, *(R)*-roscovitine, seliciclib] was among the first agents evaluated in the clinic [2]. Purine bioisosteres have been also widely explored and some of them have been currently under clinical evaluation for the treatment of various cancers, and for that reason we synthesized mono- (**1a**–**1d**) and bis-pseudopurines (**2a**–**2d**), Fig. 1 [3]. We succeeded to obtain single crystals of three of them, compounds **1c**, **2a** and **2b**, and herein we report X-ray structures of these three pseudopurines.

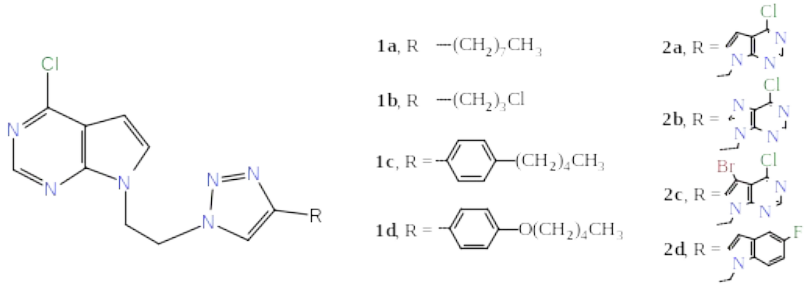

Figure 1. Molecular structures of the mono- (**1a**–**1d**) and bis-pseudopurines (**2a**–**2d**).

X-ray study reveals that the molecular structures of **2a** and **2b**, compared to **1c**, are highly bent. The molecules of all three pseudopurines are self-assembled by weak and very weak C–H···N and C–H···Cl hydrogen bonds, so forming two-dimensional network. However, two π···π interactions in **2b** link two-dimensional network into three-dimensional (Fig. 2). Due to the strongest interactions and the three-dimensional network formation, compound **2b** has the highest melting point.

All compounds were also tested on several tumor cell lines, so an additional aim of this work will be to correlate the influence of triazole ring substituents on their cytostatic activities.

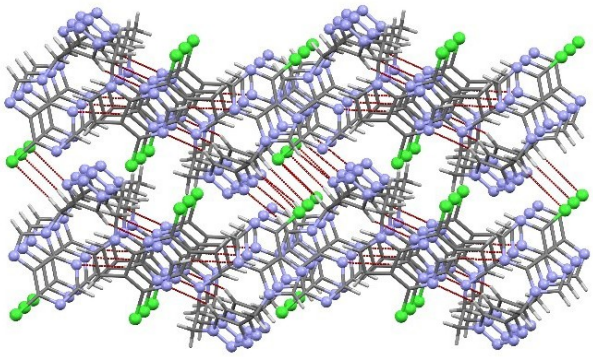

Figure 2. A part of the crystal structure of **2b**, showing three-dimensional network formed by hydrogen bonds and π···π interactions

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[3] Bistrović, A., Harej, A., Grbčić, P., Sedić, M., Kraljević Pavelić, S., Cetina, M. & Raić-Malić, S. (2017). Int. J. Mol. Sci., **18**, 2292.