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Antimicrobial Phthalocyanines Bearing Flurinated groups on peripheral positions

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Phthalocyanines as porphyrin analogs include a highly delocalized structure resulting in excellent chemical and physical properties. Due to their high electron transfer ability, Pcs have attracted attention in a wide range of high-technological fields such as chemistry, materials, physics, medicine, and nanotechnology as well as their traditional use in the dyes and pigments industry. Since these applications need soluble Pcs, the Pc ring of unsubstituted Pcs should be modified. There are mainly two ways to alter the Pc structure: First, insertion of metal ions to the Pc cavity, addition of peripherally and/or non-peripherally substituents to the Pc periphery [1,2]. Due to the antimicrobial properties of some of the phthalocyanines, they can inhibit the activity of gram-positive bacteria. Therefore, their potential as antibacterial materials can be studied for the detection and inactivation of various bacteria. TLC-direct bioautography and Disk diffusion assay are common approaches that have been performed for this purpose [3,4]. The results confirmed that phthalocyanines exhibit acceptable antimicrobial properties. In conclusion, the low expense and ease of their synthesis as well as the architectural modifications are some of the factors to attract extensive attention.

References:
[1] Kadish K., Smith K. M., Guilard R. The Porphyrin Handbook, Academic Press, Boston, 2003, 20-25.
[2] Farajzadeh N., Karaoğlu H., R., P., Akin M., Şaki N., Koçak M. B. Antimicrobial and antioxidant properties of novel octasubstituted phthalocyanines bearing (trifluoromethoxy)phenoxy groups on peripheral positions, J. Porphyrins Phthalocyanines 2019, 23, 91-102.
[3] Dimaano M.L., Rozario C., Nerandzic M.N., Donskey C.J., Lam M. and Baron E.D. Int. J. Mol. Sci. 2015; 16: 7851–7860.
[4] Ryskova L., Buchta V., Karaskova M., Rakusan J., Cerny J. and Slezak R. Cent. Eur. J. Biol. 2013; 8: 168–177.