Synthesis, structure and biological activity of dicarboxylate phosphabetsines

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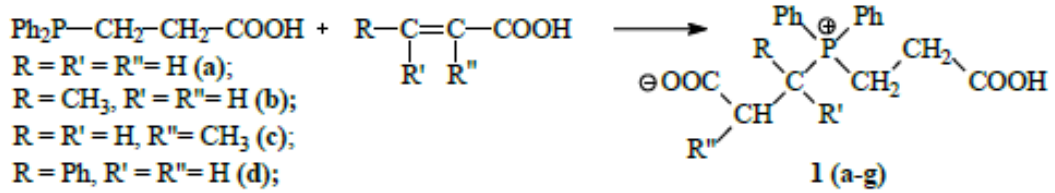
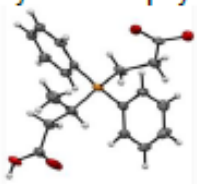
Interaction of 3-(diphenylphosphonio)propionic acid with unsaturated monocarboxylic acids leads to formation of stable dicarboxylate phosphabetaines 1 (a-g).



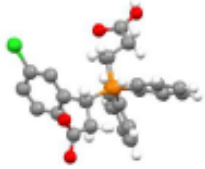
1 (a-g)

R = R' = R"= H (**a**);
R = CH_3, R' = R"= H (**b**);
R = R' = H, R"= CH_3 (**c**);
R = Ph, R' = R"= H (**d**);
R = 3-ClC_6H_4, R' = R"= H (**e**);
R = 2-Thienyl, R' = R"= H (**f**);
R = 3,5-di-*t*-Bu-4-OH-C_6H_2—, R' = R"= H (**g**).

The structure of obtained dicarboxylate phosphabetaines has been confirmed by complex of physical and physico-chemical methods, including X-ray analysis for two compounds.



X-ray data show that stabilization of these betainic structures is realized due to intramolecular H-bonds between two neighbor molecules.



Biological activity of dicarboxylate phosphabetaines has been studied (Table 1).

Table 1. Antifungal and bactericidal activity of dicarboxylate phosphabetaines

N	Zone of ingibition, d (mm)				
	E. coli	Bacillus cereus	Ps. aeruginosa	S. aureus	Candida albicans
1g	12	9	7	13	18
1f	10	-	-	11	15

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