BIOLOGICAL ACTIVITIES OF MIXTURES OF ORGANOPHOSPHOROUS HERBICIDES

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Two kinds of experiments were performed in order to check whether biological activity of some aminophosphonates may be improved when they are used in binary mixtures. The aminophosphonates studied were the following herbicides: 2,4,5-trichlorophenoxyacetic acid (2,4,5-T), N-phosphonomethylglycine acid (FMG) and its sodium salt (FMG-Na). This is a standard procedure that enables, among other things, to exploit interactions between herbicides which can increase the overall activity of mixtures, and the concentrations of the compounds can be reduced without loss of activity. Also, the above-mentioned herbicides were used in combination with derivatives of aminofluorenesphosphonic acid of a general structure like the following:

![Chemical Structure](image)

Two kinds of experiments were performed. Inhibition of growth of *Cucumis sativus* induced by particular herbicides and their equimolar binary mixtures was studied and, parallely, hemolytic efficiency of both compounds and their mixtures. Hemolytic properties of compounds were studied, since they usually follow their toxicity, especially in the case of lipophilic compounds. Pig red blood cells (RBC) were used for this purpose and kinetics of hemolysis of RBC studied.

A broad spectrum of hemolytic activity was found that depended on components of mixtures and their concentrations. The efficiency of particular mixtures to hemolyze erythrocytes ranged from synergistic, through additive to antagonistic. In some combinations, addition of a second component did not change the hemolytic efficiency of the first component and *vice versa*.

Similar results were obtained in plant experiments.

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