

## **The study of the dependence of phlogotropic and membrane-tropic activity of phosphonates on their chemical structure**

Khaziakhmetova V., Khaziakhmetov D., Ziganshin A., Ziganshina L.  
*Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia*

---

### **Abstract**

This paper deals with the study of the anti-inflammatory and membranotropic activity of dimephosphone, mephoprane and new chemical synthesis products belonging to different series of substituted phosphonic acid derivatives - monophosphonates. The effect of monophosphonates on the intensity of carrageenin inflammation in mice and rats was studied. The relationship of chemical structure and membrane-protective activity was analyzed on the models of osmotic and free-radical hemolysis. It was established that the organophosphorous compounds - derivatives of alkylphosphonic acids - show anti-inflammatory and membrane-tropic activity. The anti-inflammatory and membrane-tropic activity of functionally substituted monophosphonates depends on the length of the hydrocarbon radicals in the ester fragments of the molecule: the greater length and the presence of the methyl radicals and a carbonyl (carboxyl) group in the alkyl fragment of the molecule provide greater activity. The greatest activity has a 2-carbobutoxypropyl-phosphonic acid dibutyl ether - ephorane (IIIId).

---

### **Keywords**

Carrageenin, Dimephosphone, Ephorane, Free radical hemolysis, Inflammation, Membrane-tropic activity, Mice, Phosphonates, Rats, Red blood cell osmotic hemolysis