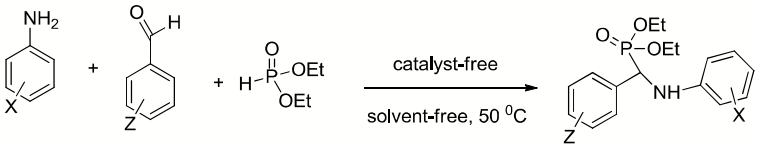
# A novel and efficient one-pot synthesis of new α-aminophosphonates and evaluation of their biologicalactivities

*Hossein Eshghi *, Mahdi Mirzaei, Mohammad Rahimizadeh*
*Department of Chemistry, School of Sciences, Ferdowsi University of Mashhad, 91775-1436 Mashhad, Iran;*
*E-mail: heshghi@um.ac.ir*

In recent years, considerable interest has been focused on the synthesis of α-aminophosphonates, because they are considered to be structural analogues of the corresponding α-aminoacids.In these connections, the utilities of α-aminophosphonates as anticancer, antibiotics and pharmacologic agents [1-2].

The synthesis of some novel α-aminophosphonates throughan addition of diethyl phosphite to electro-rich aldehyde and different amines[3]. This study represents a three-componentreaction in which no intermediate formation of either an imine or α-hydroxyphosphonate was observed. In this protocol avoids the use of any catalyst, any solvents, and dry reaction conditions.The a-aminophosphonates have been characterized by elemental analysis, IR and NMR ($^{1}$H, $^{13}$C and $^{3}$1P) spectra and X-ray diffraction. Some of these α-aminophosphonates were found to have antitumor activity on the cell lines DU145 in vitro by the MTT method.(Scheme 1)




X ,Z =ERG, EWG

**Scheme 1**

**References:**

1. 1.Rezaei, Z.; Firouzabadi, H.; Iranpoor, N.;Ghaderi, A.; Jafari, M.; Jafari, A.; Zare, H.*Eur. J. Med. Chem* . **2009,** *44*, 4266–4275.
2. Kraicheva, I.; Bogomilova, A.; Tsacheva, I.; Momekov, G.; Troev ,K. *Eur. J. Med. Chem*. **2009,** *44*, 3363–3367.
3. Jun-Tao Hou, J.;Wu, G.; Zhan,H. *Appl. Organometal. Chem.* **2011**, *25*, 47–53.