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Fosfomycin analogues as potential antitumor agents

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Fosfomycin represents a broad-spectrum antibiotic belonging to the class of phosphonic with a bactericidal activity against both gram-negative and some gram-positive microorganism. The aspect that makes it particularly interesting is the minimal occurrence of side effects which consist only of: rash, headache, nausea, rhinitis, vaginitis, etc. [1]

In addition to bactericidal qualities, literature data report that several antibiotics, including Fosfomicyn, are possible inhibitors of DNA synthesis. This characteristic could lead them to become efficient antitumor agent. [2]

Actually, a lot of study demonstrates that the co-administration of cis-platin (a well-known anticancer drug) and Fosfomycin is a good approach to decrease the onset of adverse effects due to the use of cis-platin alone such as ototoxicity and nephrotoxicity. [3] For the reasons abovementioned (overcoming cis-platin's toxicity and verify if there's the possibility to create innovative and safe anticancer drugs) the aim of our work was to synthetize fosfomycin's derivatives. These analogues have been prepared with a simple and cheap one pot reaction using dimethylphosphonate and appropriate α-halo-ketones in the presence of sodium methoxide (CH3ONa) in methanol. However, in order to establish their potential antiproliferative activity against tumour cell lines and possible prevention toward non tumoral cells *in vitro* assays will be carried out.

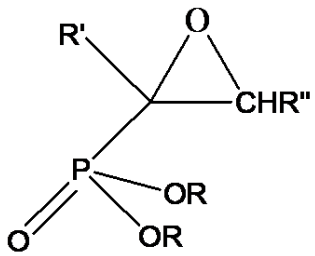

Fig. 1: General structure of Fosfomycin's analogues

References

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