

## Extraction and determination of nalidixic acid from tablet matrix by molecular imprinted polymer and determination by high performance liquid chromatography

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**Background and Aims:** In this work we reported a novel route for the separate nalidixic acid with using a molecular imprinted polymer (MIP). The measuring and analysis of result do with high performance liquid chromatography (HPLC).

**Methods:** Molecularly imprinted polymers have been prepared with nalidixic acid successfully and using as a template molecule. The polymer was synthesized in a non-covalent approach with *N,N*-Dimethyl acrilamid (DMAA), Allyl glycidil ether/imino diacetic acid (AGE/IDA) as the functional monomer, *N,N*-methylene diacrylamid as the cross-linker in methanol solution and 2,2'-azobis-isobutyronitril (AIBN) as the initiator.

**Results:** The effect of various parameters such as pH, adsorption time, amount of adsorbent, adsorption capacity of adsorbent, imprinting effect and at optimum conditions were considered and followed by HPLC analysis. According to the results, 98% capacity of polymer was saturated in 2 minutes. Several solvents were tested for choose a best route for the preparing nalidixic acid from MIP. Experiment results were interesting and showed that the highest recovery occur in the solution of methanol:acetic acid (90.9:0.1,v/v). It is important to note that imprint effect could be observed by comparing the retention of nalidixic acid on the MIP and the corresponding NIP. It is clear that MIP was able to bind nalidixic acid with recovery about 80%, whereas in NIP was slightly.

**Conclusions:** We discovered a novel and efficient adsorption experiments to evaluate the binding affinity of the imprinted polymer. It was confirmed that the binding ability of the prepared MIP for nalidixic acid was essentially sufficient coexisting in serum sample in the presence of the other compounds. It was demonstrated that this MIP could be applied to direct enrichment and determination of nalidixic acid from tablet matrix, urine and human plasma.

**Keywords:** Molecularly imprinted polymer, None imprinted polymer, Nalidixic acid, High performance liquid chromatography.