Kamran Bashir et al., Arch Chem Res 2019, Volume 3
DOI: 10.21767/2572-4657-C2-017

Surface molecularly imprinted solid phase extraction of griseofulvin from pharmaceutical preparations

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Substandard and counterfeit medicines directly influence the health and impose a great danger to individual patients and to public health. There are a large number of sub-standard medicines flooded in markets which effects human health directly and indirectly. Therefore, some novel analytical techniques are necessarily be established for detecting these sub-standard drugs. Griseofulvin is the first oral antifungal drug and is a drug of choice for the treatment of Tinea capitis. In this study the griseofulvin surface molecularly imprinted polymers (SMIPs) were grafted on the amino modified silica particles and were applied as a solid phase extraction sorbent. The factors affecting the extraction process such as sample pH, ionic strength and elution solvents were optimized. The application of SMIPs as a sorbent was exhibited by packing it in solid phase extraction cartridge and coupled it with HPLC to extract and analyze griseofulvin from tablet formulation through an offline analytical procedure. The method is linear over the range of 0.1-500 µg/mL. The method detection limit and quantification were 0.02 and 0.05 µg/ml respectively. A good recovery of 98.69-101.47% was achieved after surface molecularly imprinted solid phase extraction. The within day and between day relative standard deviations (n=3) were 4.3 and 7.1% respectively. The proposed method was applied for the determination of griseofulvin in three commercial pharmaceutical formulations. Moreover, the reuse ability of SMIPs was also evaluated. The results assured that the prepared polymer particles had good durability and can be reused many times with relatively low performance loss. This simple, specific, selective and cost effective method can be applied for the routine quality control analysis of this drug.

Biography

Kamran Bashir is a PhD student under the supervision of Professor Qiang Fu. His major expertise's are in drug analysis from complex matrix samples and preparation of molecularly imprinted polymers on different supporting materials like magnetic and silica nanoparticles. This scheme of preparation and application will be helpful in the analytical investigation of antifungal drug for quality control and manufacturing purposes.

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