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Synthesis, characterisation and biotransformation of novel 1, 4-dihydropyridine derivatives

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Chiral molecules are the molecules which possess non-superimposable mirror image, referred as enantiomers. Stereoisomerism may result in altogether varied pharmacological activity and potency. In this regard, a drug molecule with a single chirality would render to be more selective with improved therapeutic benefits compared to racemic analogues. Such stereoisomerism necessitates the thorough assessment of pharmacological and toxicological studies. Separation of such enantiomers has been possible with the emergence of new technologies in the last few decades before which majority of the drugs were marketed as racemates. 1, 4-dihydropyridine is a calcium channel blocker generally used in the treatment of hypertension. Novel analogues of this class have been synthesized in our lab via microwave irradiation. Microwave heating is considered to be a green approach as it makes use of the solvent which is rapid and eco-friendly. The structures for the same compounds were confirmed with the help of NMR, IR and MS analysis. The synthesized compounds were subjected to enzymatic hydrolysis using majorly *Candida antarctica*, *Pseudomonas lipases* anticipating the induction of chirality. The results for the same have been established using chromatography methods which have been optimised for these compounds in terms of mobile phase composition, temperature, types of columns and flow rate so as to characterise these compounds in the shortest time. The retention time for all these compounds has been optimised to be less than 10 minutes. Their standard curves have been found to be linear over the concentration range of 10-60 µg ml⁻¹. It has been demonstrated that the validated methods are simple, rapid, specific and reproducible and hence can be of great utility in the routine analysis of these drugs.

Biography

Anupreet Kaur is serving as an Assistant Professor at UIET, Panjab University Chandigarh, India. She has completed her Master's in Chemical Engineering and is pursuing her PhD in Biotechnology.

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