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Green bivariate calibration method vs. HPLC: A study on simultaneous determination of binary components in pharmaceutical formulations

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Developing a fast, reliable and precise analytical method is the objective of current analytical methods. Miniaturization and reduction of the consumption of organic chemicals is a second objective. In our group, we have challenged these requirements by developing the bivarite calibration method to quantify binary components in pharmaceutical preparations by UV-vis spectrophotometer. The bivariate method requires direct UV-vis acquisition, organic solvent less for sample preparation and short time for data treatment. The quality of the bivarite method results and the environmental friendliness of the method compared to HPLC method meet the key components of green analytical method. The HPLC methods are the current method of choice in routine drug monitoring, though it requires lengthy procedure and use of organic solvent. The proofs of concept presented here demonstrate the usefulness of the bivarite methodology and how potentially in future, might be a substitute for non-green, laborious HPLC methods.

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The versatile biocatalyst-*Candida parapsilosis* ATCC 7330

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Biocatalysis, an important 'green' component of sustainable chemistry, primarily, implies the use of enzymes in synthetic organic chemistry. It has been projected that the industry method of synthesizing 20% of the global production of non-natural chemicals by 2020 will employ biocatalyst- mediated reactions. The use of whole cells of *Candida parapsilosis* ATCC 7330 has been effectively used by us to generate a variety of optically pure sec. alcohols and amines by deracemisation and asymmetric reduction, which have also been used as chiral synthons in a larger synthetic scheme. This yeast has been shown to oxidise primary and sec. alcohols and also has acylase activity. All these results in high ee [up to 99%] and yields [up to 85%]. Parallely, we have crystallised a carbonyl reductase from the Candida in order to understand the enantioselectivity of the enzyme at the molecular level. The talk will summarize our results.

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