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Oxidative Coupling Method for the Estimation of Darunavir and Capecitabine by Visible Spectrophotometry

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Abstract : Objective This proposed work describes two simple and fast colorimetric methods for the estimation of oxidation complexes of Darunavir and Capecitabine with 2, 2'-bipyridyl and ferric chloride.

Methods Both the methods were developed on Perkin Elmer LAMBDA 25 UV –VIS spectrophotometer interfaced with UV Win lab software and 1cm quartz cells. The functional groups susceptible to oxidation gets oxidized with ferric chloride and couples with 2, 2'-bipyridyl. The method was optimized as per standard optimization parameters.

Results By the optimized method the λ max of the reddish pink colored chromogen of DNV was found to be at 522 nm and orange colored complex of CAP at 382 nm. The linearity range of CAP is 40-160 µg/ml and DNV is 10-60 µg/ml; LOD and LOQ was found to be 6.51069 and 21.7023 µg/ml for CAP; 0.6901and 2.3004 µg/ml for DNV. The colorimetric methods were extensively validated as per ICH guidelines and all the parameters were within the acceptance criteria with the correlation of 0.999 and % RSD less than 2 for both the methods.

Conclusion The methods were proved to be more accurate, simple, precise and rapid by statistical validation as well as recovery studies and could be used for routine laboratory analysis.

Key words : Darunavir (DNV), Capecitabine (CAP), 2, 2'-bipyridyl, ferric chloride, Oxidation complex.

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