

# Simultaneous voltammetric determination of levodopa, carbidopa and benserazide in pharmaceuticals using multivariate calibration

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An analytical methodology based on differential pulse voltammetry (DPV) on a glassy carbon electrode and the partial least-squares (PLS-1) algorithm for the simultaneous determination of levodopa, carbidopa and benserazide in pharmaceutical formulations was developed and validated. Some sources of bi-linearity deviation for electrochemical data are discussed and analyzed. The multivariate model was developed as a ternary calibration model and it was built and validated with an independent set of drug mixtures in presence of excipients, according with manufacturer specifications. The proposed method was applied to both the assay and the uniformity content of two commercial formulations containing mixtures of levodopa-carbidopa (10:1) and levodopa-benserazide (4:1). The results were satisfactory and statistically comparable to those obtained by applying the reference Pharmacopoeia method based on high performance liquid chromatography. In conclusion, the methodology proposed based on DPV