Disposable array sensor strip for quantification of sinensetin in Orthosiphon stamineus Benth samples

A disposable screen printed array sensor strip based on self-plasticized lipid membranes combined with chemometric algorithm has been developed and applied for quantification of Orthosiphon stamineus Benth extracts. Sinensetin, a pharmacologically active flavonoid in Orthosiphon stamineus Benth, was quantified with the sensor system using standard addition method. The method was compared with high performance thin layer chromatography (HPTLC). Partial least square (PLS) and principal component regression (PCR) were applied to the array sensor output to determine the sinensetin in O. stamineus samples from different suppliers. Comparison between the PLS and PCR models presented in the quantitative analysis showed that PLS have substantially better predictive capability than PCR. The root mean square error (RMSE) of Prediction for PLS and PCR were 0.17 ppm and 0.19 ppm, respectively. The concentration of sinensetin by PLS fell within the range of 0.25%-0.30% in six different batches of extracts that were supplied by Hovid Sdn Bhd (HV) while a range 0.18%-0.24% was obtained in ten different batches of extracts supplied by Nusantara Herbs Sdn Bhd (NH). The array sensor showed good correlation (0.9902) with the HPTLC method.