Abstract

Dacarbazine was determinated by sequential injection analysis with chemiluminiscence detection during reaction of sample and $KMnO_4$ in sulfuric acid. Reagent volumes, their concentrations, flow rate and structure of cycle were optimised. Also the influence of solvents (water, 60% ethanol, 60% methanol) and enhancers of CL reaction (sodium polyphosphate, formic acid, glutaraldehyde and formaldehyde) was tested. Final optimal conditions are: 40 µl 1 M H_2SO_4, 3 µl 10 mM $KMnO_4$, 30 µl 10 mM solution of dacarbazine, 40 µl 1 M H_2SO_4, eventually aspiration of 50 µl enhancer. Aspiration of the solutions proceeded in flow rate 100 µl/s, mixing and flow rate to the detector was 40 µl/s. Washing with oxalic acid was used after each measurement cycle to prevent $KMnO_4$ settling on tubes. Voltage at the photomultiplier of the detector was 420 V. The calibration relations of CL intensity to concentration of the samples were nonlinear with possibility of selection of linear areas. The linear area for the solution of dacarbazine without enhancers wasn´t found with correlation coefficient high enough, for the solution of dacarbazine with 60% methanol was 0.5 – 10 mmol/l, for the solution of dacarbazine with 1.39 M formic acid 4 – 10 mmol/l. Limit of detection for the solution of dacarbazine without enhancers was 0.1474 mmol/l, for the solution of dacarbazine with 60% methanol 0.2269 mmol/l, for the solution of dacarbazine with 1.39 M formic acid 0.1077 mmol/l. Quantitation limit was calculated as 0.4999 mmol/l for the solution of dacarbazine without enhancers, 0.7505 mmol/l for the solution of dacarbazine with 60% methanol, 0.3702 mmol/l for the solution of dacarbazine with 1.39 M formic acid. Repeatability of dacarbazine determination was 2.10% (5 mM solution) and 3.88% (1 mM) at the solution of dacarbazine without enhancers; 4.00% (5 mM) and 2.63% (1 mM) at the solution of dacarbazine with 60% methanol; 2.22% (5 mM) and 3.08% (1 mM) at the solution of dacarbazine with 1.39 M formic acid.