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[Authors](#)



chem@tubitak.gov.tr

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Abstract: The effect of surfactants (cationic, anionic and non-ionic) on the performance of plastic membrane promethazine electrodes was studied. Three electrodes with membranes containing either sodium tetraphenylborate, sodium tetraphenylborate + 18-crown-6, or 18-crown-6 were prepared. The cationic and the anionic surfactants exhibited potential shifts and a super-Nernstian slope of the calibration graphs. The non-ionic surfactant did not cause alterations in the calibration graphs. The effect of surfactants' concentrations was investigated. The performance characteristics of these electrodes were studied. The slopes of the calibration graphs of the 3 electrodes were 54.4, 54.9 and 48.4 mV/decade. The rectilinear ranges were 2×10^{-5} - 10^{-2} , 1.0×10^{-5} - 10^{-2} and 3.2×10^{-5} - 10^{-2} M corresponding to the 3 electrodes. The optimum pH range was 2-7. The selectivity coefficient values were calculated for different inorganic cations, amino acids and pharmaceutical amines. Direct potentiometry and potentiometric titration were applied for the determination of promethazine in its pure form or in its pharmaceutical preparation. The recovery range and the relative standard deviation values for potentiometric titration were 98.6%-100.1% and 0.79%-1.96% (4 determinations), respectively. For direct potentiometry, the corresponding recovery values were 98.6% and 99.5%, and the relative standard deviation values were 1.49% and 1.02% (4 determinations).

Key Words: Effect of surfactant on PVC-membranes, promethazine determination, promethazine-selective electrode

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