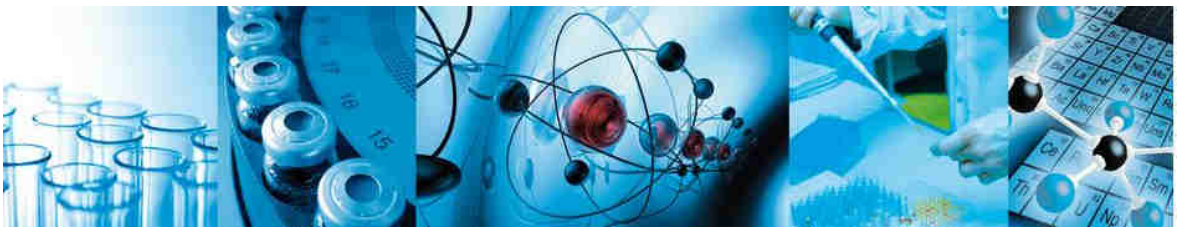

Sweat Chloride quantitation using CE-C4D

Capillary Electrophoresis used for Cystic Fibrosis diagnosis

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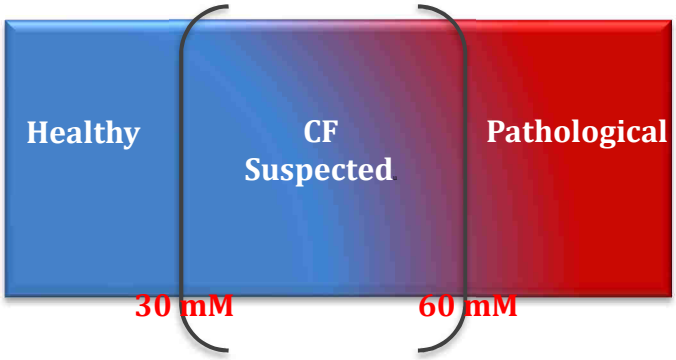
INTRODUCTION

Sweat chloride concentration is considered as a biomarker for diagnosis of cystic fibrosis (CF). This application compared the results obtained with the sweat test using the WynSep capillary electrophoresis (CE) method and coulometric measurement (Chlorochek chloridometer, CC) of sweat chloride in subjects with suspected CF. The Wyn-CE exhibited an excellent correlation with the quantitative coulometric test, and can be used in the diagnosis of CF for newborn screening or in children with a small volume.

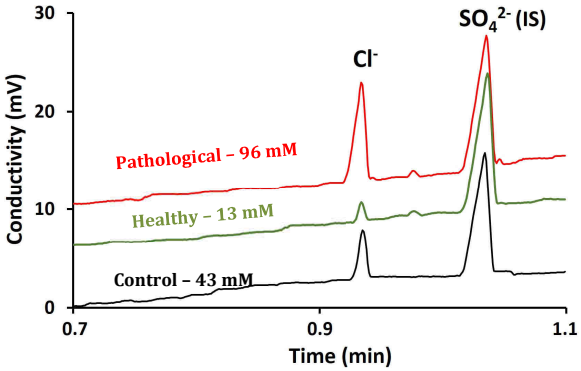
STANDARD AND REAL ANALYSIS

Buffer : WynSep Ion Buffer – Anion W11
Capillary : neutral, L = 35 cm, ID = 50 µm
Injection : hydrodynamic, 50 mbar, 5 s
Voltage : -25 kV
Detection : C4D
Temperature : 25 °C

Chloride Sweat Test



Example of Electropherograms

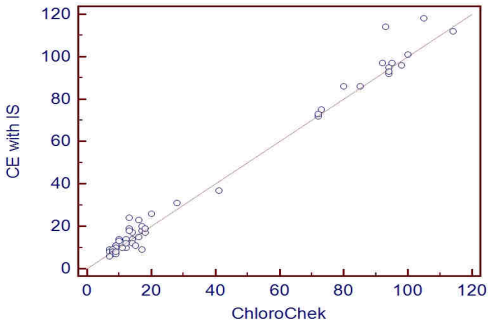


Performances

Sample volume	1 µL
LOD	2 µmol/L
Repeatability (Cl, mmol/L ; n ; RSD %)	
low	19.3 ± 0.9 (11 ; 4.7 %)
medium	43.4 ± 0.9 (11 ; 2.1 %)
high	88.5 ± 1.0 (11 ; 1.1 %)
Reproductibiltiy (Cl, mmol/L ; n ; RSD %)	
low	19.6 ± 1.1 (28 ; 5.6 %)
medium	43.7 ± 1.7 (28 ; 3.9 %)
high	88.9 ± 2.4 (28 ; 2.7 %)

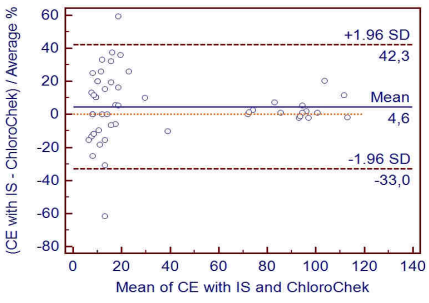
Correlation with coulometric reference method

Correlation Line



Strong correlation of both methods.The Pearson correlation coefficient was at 0.993

Bland-Altman Test



No systematic bias of significant magnitude was observed

The WynSep CE exhibited an excellent correlation with the quantitative coulometric test, and can be used in the diagnosis of CF for newborn screening or in children with a small volume.

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