CHLORIDE IN URINE BY ISE

Chloride concentration in urine may be determined using the technique of known addition.

Equipment Required

1. EDT directION DR359TX Ion Meter or pH meter with Millivolt scale
2. Flow Plus CombinationChloride ion selective electrode (Cat No 5261)
3. Volumetric glassware

Reagents

1. Chloride 100 mmol/l^{-1} stock standard
2. 1 Molar KNO_3 (ISAB)

Standard Preparation

Dissolve 5.844g of NaCl (analar) in a 1 litre volumetric flask with deionised water and dilute to the mark.

This is 100 mmol/l^{-1} $C1^-$ stock standard.

By serial dilution of this stock standard prepare also a 10 mmol/l^{-1} and a 1 mmol/l^{-1} chloride standard.

Slope Determination

1. Fill the outer reference electrode compartment with Chloride Flow Plus Fill soln. (Cat no 6261)

2. To 20 mls of 10 and 1 mmol/l^{-1} Cl^- solutions add 2 mls 1M KNO3.

3. Measure the potential of the 1 mmol standard (mV_1).

4. Rinse the e1ectrodes with deionised water and measure the potential of the
   10 mmol/l^{-1} standard (mV_2).
   Electrode slope = $mV_2 - mV_1$ (mV/decade)

Sample Preparation

To 25 mls of urine in a 50 ml volumetric flask add 5 mls 1M KNO_3 and dilute to the mark with deionised water.

Method

1. Immerse the electrodes in 50 mls of the prepared sample and record the mV potential (mV_1).

2. Add 5 mls of the 100 mmol/l^{-1} Chloride standard and record the new potential (mV_2).

Calculation

If a pH/ion meter with a K add mode is being used the chloride concentration in the sample is displayed automatically in direct concentration units of your choice. This value must be multiplied by 2 to obtain the chloride level in urine samples.

If a pH meter with millivolt scale is being used operate the following calculation.

$$Cu = Cs \left[\frac{Vs}{Vu + Vs}\right] \left[10^{\Delta E/S} - \frac{Vu}{Vs + Vu}\right]^{-1}$$

where: Cu = concentration of the sample
Cs = concentration of the standard (100 mmol/l^{-1})

Vs = volume of the standard (5 mls)

Vu = volume of the sample (50 mls)

$\Delta E = mV_2 - mV_1$

S = electrode slope in mV

Cu is multiplied by 2 to account for the dilution factor.

Note

If smaller sample volumes are to be analysed this can be achieved by scaling down all volumes in the method or by dilution of the urine specimen.

More Information or Help?

For Further Assistance please contact your local EDT directION Distributor. Details are to be found on the front page of this website (www.edt.co.uk) using the "Distributors" link.

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