Ti Application Note No. T- 45

Title:	**Acetate, chloride and phosphate in infusion solution**

***Summary*:**	Determination of acetate, chloride and phosphate in infusion solution by potentiometric titration with sodium hydroxide after conversion of the anions to the corresponding acids.

Sample:	Infusion solution

Sample Preparation:	Pass 50 mL solution through a strongly acidic cation exchanger resin (column) into a 100 mL volumetric flask. Rinse with dist. water, fill the flask to the mark and mix the contents.

Instruments and Accessories:	702, 716, 736 or 751 Titrino or 726 Titroprocessor, 6.0233.100 combined pH glass electrode

Analysis:	Pipette 50.0 mL of the prepared sample solution (corresponds to 25 mL of the original sample) into a beaker and titrate with c(NaOH) = 0.2 mol/L. The first equivalence point of the titration curve corresponds to the sum of HCl and the first dissociation step of H_3PO_4, the second EP corresponds to acetic acid and the third EP to the second dissociation step of H_3PO_4.

Calculation:	1 mL c(NaOH) = 0.2 mol/L corresponds to 11.689 mg NaCl 19.629 mg CH_3COOK 27.217 mg KH_2PO_4 RS1 = EP3 - EP2 RS2: g/L KH_2PO_4 = RS1 * C01 / C00 RS3: g/L NaCl = (EP1 - RS1) * C02 / C00 RS4: g/L CH_3COOK = (EP2 - EP1) * C03 / C00

Calculation:	EP1 = titrant consumption to reach the first EP EP2 = titrant consumption to reach the second EP EP3 = titrant consumption to reach the third EP C00 = 25.0 (mL of original sample contained in the sample volume used for the titration) C01 = 27.217 (KH_2PO_4 equivalent in mg/mL) C02 = 11.689 (NaCl equivalent in mg/mL) C03 = 19.629 (CH_3COOK equivalent in mg/mL)

Remarks:	– If the sample also contains sulphate, this is detected together with HCl and the first dissociation step of H_3PO_4 at the first EP of the titration curve. In this case chloride has to be determined separately by potentiometric titration with $AgNO_3$. – Gluconate can not be differentiated from acetate by titration.