

EVALUATION OF COMMERCIAL DRINKING WATER FILTERS
FOR REMOVAL OF ANIONS AND CATIONS USING
ION CHROMATOGRAPHY

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Evaluation of commercial drinking water filters for removal of anions and cations using ion chromatography / Ho Ya Huey.

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ABSTRACT

Seven inorganic anions (F^- , Cl^- , NO_2^- , NO_3^- , PO_4^{3-} , SO_4^{2-}) and six cations (Li^+ , Na^+ , NH_4^+ , K^+ , Ca^{2+} , Mg^{2+}) in the filtered water samples were analyzed by means of the suppressed column ion chromatography. Eluent concentration, pH of eluent, eluent flow rate and injection volume were optimized to enhance the sensitivity. Detection limit and quantification limits were estimated in range of 0.002 to 0.746 mg/l. Samples analysis were performed with good estimated reproducibility with relative standard deviation (RSD) within 5.00% except the one sample. All filter devices from RM40.00 to RM120.00 are not significantly remove the anions and cations but removed 33.00% of fluoride from tap water. None to the samples concentration are excess the WHO guideline value.

ABSTRAK

Tujuh inorganik anion dan enam kation terkandung dalam sampel penapis air telah dikaji menggunakan kromatografi yang dilengkapi dengan turus pecahan. Kepekatan eluen, pH eluen, kadar aliran eluen dan isipadu suntikan telah dioptimumkan untuk meningkatkan kepekatan alat kromatografi ion. Had pengesanan dan had kuantifikasi menghitug adalah dalam lingkungan 0.002 hingga 0.746 mg/l. kebolehulangan sampel analysis adalah baik dengan nilai sisihan piawai relatif yang dibawah 5.00%. Semua penapis air berharga RM40.00 hingga RM120.00 tidak berfungsi nyata untuk mengurangkan anion dan kation tetapi mengurangkan 33.00% fluoride dari air paip. Tiada kepekatan sampel melebihi nilai garis panduan Pertubuhan Kesihatan Sedunia (WHO).