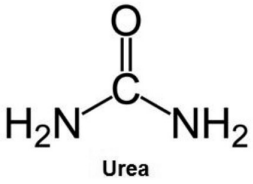
Analysis of Urea

Fast, Reproducible HPLC Method



Urea

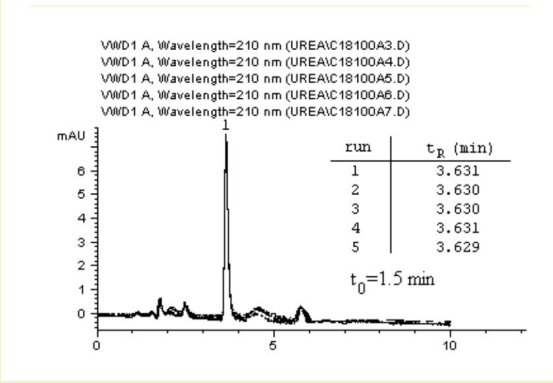


Figure above show 5 consecutive runs using 100% water mobile phase without any loss of precision.

Note: There is growing demand for a sensitive and reliable procedure for the determination of urea in many matrices such as milk, soil extracts, seawater and wine. In addition there are several clinical applications for the analysis of this compound. The most common approach for measurement of urea involves detection of ammonia (after hydrolysis) by color forming reactions – enzymatic, colorimetric methods. The other techniques require noxious reagents and produce an unpleasant odor [1]. Newer methods involve high-performance thin layer chromatography-densitometry, alkalimetric titration. HPLC is the most specific method but either organic normal phase chromatography or ion pairing chromatography have to be used to retain this very polar compound until this method.

[1] "Determination of urea using HPLC with fluorescence detection after automated derivatization with xanthydrol", S. Clark, P.S. Francis, X.A. Conlan, N.W. Barnett, J. Chromatography A, 1161 (2007) 207-213.

Method Conditions

Column: Cogent Bidentate C18™, 4µm, 100Å

Catalog No.: 40018-15P

Dimensions: 4.6 x 150 mm

Mobile Phase: A: DI H_2O (Isocratic run: 100%A)

Injection vol.: 10µL

Flow rate: 0.5 mL/min

Detection: UV 210 nm

Peak: 1. Urea (1 mg/mL in DI H_2O)

Discussion

A Cogent Bidentate C18 column was successfully used to retain Urea when a 100% DI H_2O mobile phase was used. Since this hydrophobic column was made on TYPE-C Silica™ DI H_2O can be used as the complete mobile phase without fear of phase "dewetting" and subsequent loss of retention time. The presented method has the advantage of being very simple, without time consuming derivatization or reaction steps when compared to other methods using ordinary C18 columns. Urea can be determined in complex mixtures using this very fast, reproducible (see insert on the chromatogram) method which could also be useful in the analysis of biological samples for diagnostic purposes.

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