components of waters and soils. Quantitative recovery of all metals was observed from 0.5-3 M NaCl, 1 M CaCl₂, 1 M MgCl₂, 1 M AlCl₃.

The elements preconcentrated were determined directly on filters with scanning crystal-diffraction XRF spectrometer “SPECTROSCAN-U” (St. Petersburg, Russia). The technique for simultaneous XRF determination of Pb, Zn, Cu, Ni, Co, Fe(III) and V(IV) in aqueous solutions after preconcentration of these elements on cellulose filters in the form of complexes with APDC was proposed. The detection limits of elements achieved at preconcentration from 100 ml of sample are 0.01 (Pb), 0.001 (Zn), 0.005 (Cu), 0.001 (Ni), 0.001 (Co), 0.005 (Fe(III)) and 0.004 (V(IV)) ppm. The relative standard deviation at determination of 0.02-0.5 ppm of metals did not exceed 0.08.

**EVALUATION OF FOOD ANTIOXIDANT ACTIVITY BY PHOTOSTORAGE CHEMILUMINESCENCE**

T.Triantis, K.Papadopoulos, D.Dimotikali, J.Nikokavouras

a National Research Centre for Physical Sciences "Demokritos", Institute of Physical Chemistry, 15310 Ag. Paraskevi, Athens, Greece; e-mail: kyriakos@chem.demokritos.gr

b National Technical University, Chemical Engineering Department, Iroon Politechniou 9, 15780 Zografou, Athens, Greece; e-mail: demot@orfeas.chemeng.ntua.gr

Currently, there is a strong demand from the food industry to replace synthetic antioxidants by natural ones. The introduction of new antioxidants requires reliable methods for the evaluation of their antioxidative activity, and a number of studies have been published on this subject. Chemiluminescence (CL) measurements are often used to determine initial radical products by employing luminol or isoluminol based assays. We have recently published the chemiluminescence of photo- or radiolyzed azaaromatics on reaction with reactive oxygen species. We expected that addition of an antioxidant in the photolyzed mixture would scavenge the reactive oxygen species thus quenching the light reaction and leading to a simple and rapid method for the evaluation of antioxidant activity. In this paper we report a method that employs photostoragechemiluminescence (PSCL) - a term that we have coined together to describe a photolysis process leading to stable chemiluminescent products and subsequent CL [1] - of acridine for the evaluation of the antioxidant activity of food additives, such as, adipic acid (E 300), tartaric acid (E 334), citric acid (E 330), ascorbic acid (vitamin C, E 300), malic acid (E 296), fumaric acid (E 297) and for comparison purposes, the vitamin E analogue, Trolox (6-hydroxy-2,5,7,8-tetramethyl-2-carboxylic acid).

The hydroxide anion-induced photostoragechemiluminescence of acridine was depressed by all antioxidants. Maximum antioxidant activity was observed at higher concentrations of all antioxidants (10⁻³-10⁻² M). Medium depressions were observed with fumaric, malic and tartaric acids, compared to adipic acid, whereas citric acid and trolox showed the lowest antioxidant activity; the most marked inhibition was observed with adipic acid. We found that all food antioxidants investigated in this work were 2-3 times more effective than trolox. At very low concentrations (10⁻⁶ M) trolox and citric acid showed pro-oxidant activity, difficult to explain.

References

Acknowledgment: The authors wish to thank the General Secretary of Research and Technology of Greece for funding this project.
NEW RESEARCHES ON B12 VITAMIN FROM BLACK SEA MUD

Milpomenia Georgescu, Rodica Dinica, Bianca Furdui

University “Dunarea de Jos” of Galati, Domneasca, 47, 6200, Galati, Romania, e-mail: milpomeniag@yahoo.com

Key words: B12 vitamin, absorption

Vitamins, and mainly B1, B12 and H vitamins represented the most important factors biologic actives for aquatic ecosystems due to their activity to vivant organisms.

In this paper we made a study on the content of B12 vitamin in Black Sea mud of the Romanian shore.

Because the B12 vitamin is sensible on light the samples was take over in April, May and June from the appropriate depth and immediately processed.

The samples were treated with NaCN obtaining a final solution of 1% concentration at pH 9-10 which was hold at room temperature for a few hours. Than one sample, corrected at pH 11 was extracted with benzylic or buthylic alcohol. At the same time, another sample, corrected at pH 5,5, was extracted with the same alcohol. The obtained solutions were treated with equivalent volumes of chloroform. After extraction with water, from the aqueous extract was taken samples, which were treated with KCN 3% in parallels with an equal sample treated with buffer solution pH 5-6. It was determined the absorption on UV-VIS spectrophotometer for the above samples. The determined absorptions were reported to a standard sample of 1µg/ml.

The determined contents of B12 vitamin are within the normal values for the period of the study with an increase in June.

References

LCNMR: AN ALTERNATIVE TO LCMS AND DAD-HPLC FOR THE ANALYSIS OF COMPLEX MIXTURES

Richard G.Brereton, Hailin Shen, Christian Y.Airiau

School of Chemistry, University of Bristol, Cantock's Close, BRISTOL BS8 1TS, UK, e-mail: r.g.brereton@bristol.ac.uk

LCNMR has been available for over a decade, but until recently most applications have been expensive using specialised instrumentation and mainly aimed at structure elucidation of minor impurities and metabolites in pharmaceutical chemistry where there is good separation. However LCNMR has great potential due both to the ability to obtained detailed structural information and also the quantitative relationship between signal intensity and number of protons, removing the need for calibration standards. Currently, cheap flow cells are now...