

MEETING ABSTRACT

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# Stability monitoring of some acetylcholinesterase reactivating drugs

Nazila Ram<sup>1</sup>, Péter Szegi<sup>2</sup>, Kamil Kuča<sup>3</sup>, Farzad Hashemi<sup>2</sup>, Kornélia Tekes<sup>2\*</sup>

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## Background

Widespread use of organophosphorous compounds (OPs) in agriculture and as nerve agents as well as a lack of clinically effective antidotes initiated the synthesis of new pyridinium bis-aldoximes (K-compounds) with high potency in reactivating acetylcholinesterase irreversibly inhibited by OPs [1,2]. We aimed to optimize an HPLC method sensitive enough to determine K-compounds from different biological matrices (blood, brain and cerebrospinal fluid) [3,4].

## Methods

Samples of biological origin needed proper clean-up. An RP-HPLC method using either UV and amperometric detector was used following separation on a Zorbax Rx-C18 octadecyl silica column with a mobile phase of phosphate buffer with 20% acetonitrile (pH 3.7). 1-Octane sulphonic acid sodium salt (OSA) was used as ion-pairing agent. Calculation of theoretical plate number, asymmetry of peaks, limit of quantitation (LOQ), lower limit of detection (LLOD) and determination of pH, temperature and OSA concentration dependence was done.

## Results

Elution characteristics of bis-pyridinium mono-aldoximes were depending on the OSA concentration, however, to a lesser extent than the bis-pyridinium bis-aldoximes. A double bond in the alkyl chain decreased the dependence from the ion-pairing agent concentration only to a minor extent. When the samples were kept at a pH under 1.5 a peak of degradation product was generated. The time course of degradation in an acidic milieu was calculated.

## Conclusions

Appropriate clean-up, optimal concentration of the ion-pairing agent and a well-selected mode of detection are the key factors for optimal determinations. We point out decomposition of pyridinium aldoximes at acidic pH.

## Author details

<sup>1</sup>Department of Pharmacology and Pharmacotherapy, Semmelweis University, 1089 Budapest, Hungary. <sup>2</sup>Department of Pharmacodynamics, Semmelweis University, 1089 Budapest, Hungary. <sup>3</sup>Department of Toxicology, University of Defence, 500 01 Hradec Králové, Czech Republic.

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\* Correspondence: drtekes@gmail.com

<sup>2</sup>Department of Pharmacodynamics, Semmelweis University, 1089 Budapest, Hungary

Full list of author information is available at the end of the article