

# Cholinesterase Biosensors Based on Screen-Printed Electrodes Modified with Co-Phtalocyanine and Polycarboxylated Thiocalixarenes

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## Abstract

New acetylcholinesterase biosensors have been developed on the base of screen-printed electrodes modified with Co-phtalocyanine and polycarboxylated thiocalixarenes as enzyme support. The biosensors showed improved operational and analytical characteristics and high accuracy of the signal measurement. The biosensors developed made it possible to detect 3-200ppb of paraoxon and 1-50ppb of malaoxon with detection limits down to 2 and 0.05ppb, respectively (incubation time: 15min). The influence of macrocyclic receptors was related to nonenzymatic accumulation of the analytes within the surface layer and electrostatic interactions with remaining free carboxylic groups of the support. The reliability of the inhibition measurements was confirmed by testing spiked samples of sparkling and tape waters. © 2012 WILEY-VCH Verlag GmbH & Co. KGaA, Weinheim.

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## Keywords

Acetylcholinesterase, Biosensors, Inhibitor measurements, Screen-printed electrodes