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(54) **ASSAY FOR DETECTING, MEASURING AND MONITORING THE ACTIVITIES AND CONCENTRATIONS OF PROTEINS AND METHODS OF USE THEREOF**

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(52) **U.S. Cl.** **435/20**

(58) **Field of Search** 435/20

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(57) **ABSTRACT**

An assay for detecting, measuring, or monitoring the activity or concentration of at least two proteins that have similar or overlapping properties is disclosed. The assay comprises first determining the sensitivity coefficients of the substrates for each of the proteins in which the concentrations are to be determined. This method may be used for detecting, measuring, or monitoring the activity and concentration of AChE, BChE, or both in a test sample which test sample may be whole and unprocessed blood or tissue. Also disclosed are methods of using the assay to detect a subject's exposure to an agent which affects cholinesterase, determine the efficacy or progress of a treatment, determine the amount of protection provided against exposure to an agent which affects cholinesterase, or both, screen a subject for having a drug sensitivity or a particular disease, detect a change in red blood cell count of a subject, determine whether a candidate compound affects cholinesterase. Also disclosed are devices and kits for detecting, measuring, or monitoring the activities and concentrations of AChE, BChE, or both.

15 Claims, 22 Drawing Sheets