

#### **64. TOWARDS A COMMON METHOD FOR MEASURING CHOLINESTERASE ACTIVITY**

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In occupational health, the estimations of the activity of acetyl- as well as butyrylcholinesterase give a good indication for intoxication with insecticides, especially when normalized to the hemoglobin content of the sample. The same activity measurements are also of importance in the treatment of heavily intoxicated patients, since this allows the follow up of the efficacy of the treatment. Several groups agreed, during a special CBMTS meeting in 1997, in important methodological steps towards developing a common accepted method. This method had to be worked out and a kit was shipped to different laboratories. The outcome of the results showed a relative high variation in butyrylcholinesterase and in hemoglobin content.

The variation in hemoglobin measurement was clearly due to the loss of hydrocyanic acid in the ready reagent contained and shipped with the kit.

The variation in the butyrylcholinesterase turned out to be an artifact resulting from the variable inhibition of this enzyme by the detergent Triton X-100. In our original assay at the AC Lab., we were lysing the blood with quartz distilled water, but not adding a detergent. Triton X-100 was being used by several laboratories in their cholinesterase measurements. We did not at first think to check the detergent effect on both enzymes individually and compare it to the lysis with water. We have now tested some detergents for their effect on both enzymes, as well as on the estimation of the hemoglobin. The detergent concentration used was in each case above the critical micelle concentration. These results and the resulting modified method will be presented.

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