

Biomonitoring of organophosphorous and carbamate pesticides has focused primarily on the inhibition of blood cholinesterase. Blood biomonitoring, however, can be invasive, time-consuming, and costly, especially in young children and infants. Therefore, saliva biomonitoring has recently been explored as a practical and feasible alternative to blood. To determine whether an individual's salivary cholinesterase was consistent over time and which of two methods was more accurate and preferable, saliva samples were collected once per week for five consecutive weeks from 20 adults using a Salivette® (cotton swab) and pipette. To measure cholinesterase activity, the radiometric method developed by Johnson and Russell (1975) was modified for human saliva by increasing tissue volume, substrate volume, incubation time, and incubation temperature. Using this method, cholinesterase was found to be present and measurable, with good repeatability (2.2% average difference between duplicate samples). Activity in pipette-collected samples ranged from 0 to 153.7 nmol hydrolyzed/min/ml saliva, while activity in Salivette®-collected samples was slightly higher: 3.4 to 264.7 nmol hydrolyzed/min/ml saliva. The activity for some individuals was very consistent during the five weeks, whereas for others it was variable, and, in general, variability in activity for the two collection methods was comparable (mean coefficient of variation [CV] for pipette=34.8%; Salivette®=35.6%). Cholinesterase levels from the two collection methods were significantly correlated ($r=0.41$, $n=100$, $p<0.05$, two tails). In terms of participant preference, the Salivette® was preferred to the pipette method at the majority (86%) of visits. Results from this study demonstrate that (1) cholinesterase is measurable in saliva, (2) in some people (about 50% of our population) the activity is consistent from week to week, and (3) the collection methods yield comparable results, though participants prefer the Salivette®. This is an abstract of a proposed presentation and does not reflect Agency policy.