A CONVENIENT METHOD FOR ROUTINE ESTIMATION OF DEAD TIME IN GAS CHROMATOGRAPHY

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A set of retention times ($t_R$) of n-alkanes at different temperatures and the primary dead times ($t_M$) are used to determine the 4 numerical constants ($a$, $b$, $c$, and $d$) of an equation. This equation is rearranged into a second equation, used in turn for routine calculation of the secondary dead time ($t_{MS}$) of each chromatogram from any member of the n-alkane series. Equation 2 can be used to calculate the $t_{MS}$ of both packed and capillary columns. The calculated $t_{MS}$ values are in good agreement with those of the $t_M$ values. The greatest difference is 3.38%, but it is speculated that the percent difference would be lower when more $t_R$ data are collected for the determination of the 4 numerical constants of Equation 1. Error in measurement of retention time undoubtedly would affect the accuracy of the estimated dead time, but it is attenuated by a factor of $1+e^{(a+bN+c/T+dN/T)}$. 