Supplementary Material 2: Curve Fitting using Excel-Solver®

The equation, \( L_1(t) = L_1(\infty) \times (1 - \exp(-kt)) \) can be rearranged to give \( L_1(\infty) = L_1(t) / (1 - \exp(-kt)) \). As the saturated count, \( L_1(\infty) \), should be the same value for any \((t, L_1(t))\), the next equation would be \( L_1(\infty) = L_1(t_1) / (1 - \exp(-kt_1)) = L_1(t_2) / (1 - \exp(-kt_2)) = L_1(t_3) / (1 - \exp(-kt_3)) \), where \( L_1(t_1), L_1(t_2) \) and \( L_1(t_3) \) are the observed values of radioactivity at time \( t_1, t_2 \) and \( t_3 \), respectively. We generated this relationship for \( L_1(t) \) for \( t_1-3 \) and for \( L_1(\infty) \) for \( t_1-3 \) on an Excel sheet. For determining the \( k \) value that provides the best fit curve for \( L_1(t) = L_1(\infty) \times (1 - \exp(-kt)) \) at the observed radioactivity requires us to find \( k \) such that \( L_1(\infty) \) for \( t_1, t_1(\infty) \) for \( t_2 \) and \( L_1(\infty) \) for \( t_3 \) are all equal. Using this theoretical basis, we used a programme to find a \( k \) value that will yield minimum difference between the \( L_1(\infty) \) that fulfils the curve passing the measured point \( (t_1, L_1(t_1)) \) and the \( L_1(\infty) \) that fulfils the curve passing the measured point \( (t_2, L_1(t_2)) \). As an identical operation should be established between \( L_1(\infty) \) that fulfils the curve passing the measured points \( (t_2, L_1(t_2)) \) and \( (t_3, L_1(t_3)) \), and also between \( L_1(\infty) \) that fulfils the curve passing the measured points \( (t_3, L_1(t_3)) \) and \( (t_1, L_1(t_1)) \), we practically developed a program that calculated the average of absolute differences between any two \( L_1(\infty) \) first, and then searched for a \( k \) value that made this average minimum. These operations were performed using the Excel-Solver® (Generalised Reduced Gradient Method) by defining \( k \) as a changing variable, by setting the average of the absolute value of difference as the objective and by finding the minimum value for the objective.