Comparison of LLNA Responses Between CBA and BALB/c Mouse Strains

T Burns[1], J Strickland[1], E Salicru[1], D Allen[1], W Stokes[2]
[1]ILS, Inc., RTP, NC; [2]NICEATM/NIEHS/NIH/DHHS, RTP, NC.

While CBA is currently the recommended strain for the LLNA, the assay was originally developed using BALB/c mice. Since the introduction of the LLNA, several groups have published LLNA studies using BALB/c mice, including the National Toxicology Program, the National Institute for Occupational Safety and Health, and the Dow Chemical Corporation. BALB/c mice are used in countries where CBA mice are difficult to obtain. This has resulted in reference databases for the LLNA that include studies conducted with both CBA and BALB/c mice. However, there is little published literature that directly compares the performance of the LLNA in studies done on the same substances in the two mouse strains. The study reported here is a retrospective evaluation of the performance of the LLNA when using CBA mice with those using BALB/c mice. NICEATM evaluated 108 independent studies representing 15 substances in four vehicles in which 86 studies used CBA mice and 22 used BALB/c mice. Thirteen of these substances had guinea pig reference data and 12 had human reference data. LLNA outcomes using BALB/c are in agreement with LLNA outcomes obtained with CBA for 87% (13/15) of the test substances. LLNA outcomes with CBA agree with guinea pig outcomes for 92% (12/13) of the test substances and with human outcomes for 92% (11/12) of the test substances. LLNA outcomes with BALB/c agree with guinea pig outcomes for 77% (10/13) of the test substances and with human outcomes for 75% (9/12) of the test substances. A correlation analysis of log transformed EC3 values calculated using LLNA data from each of the two strains indicates that the results from the two strains are correlated ($r = 0.75$). Overall, these data indicate that LLNA outcomes do not differ appreciably when either CBA or BALB/c mice are used as test animals.
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