The influence of the number of cells scored on the sensitivity in the comet assay

The impact on the sensitivity of the in vitro comet assay by increasing the number of cells scored has only been addressed in a few studies. The present study investigated whether the sensitivity of the assay could be improved by scoring more than 100 cells. Two cell lines and three different chemicals were used: Caco-2 cells were exposed to ethylmethane sulfonate and hydrogen peroxide in three concentrations, and HepG2 cells were exposed to ethylmethane sulfonate, hydrogen peroxide and benzo[a]pyrene in up to four concentrations, in four to five independent experiments. The scoring was carried out by means of a fully automated scoring system and the results were analyzed by evaluating the % tail DNA of 100–700 randomly selected cells for each slide consisting of two gels. By increasing the number of cells scored, the coefficients of variance decreased, leading to an improved sensitivity of the assay. A two-way ANOVA analysis of variance showed that the contribution from the two variables "the number of cells scored" and "concentration" on the total variation in the coefficients of variance dataset was statistically significant.

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