Synopsis of Original Research Paper

Human-derived Corneal Epithelial Cells Expressing Cell Cycle Regulators as a New Resource for in vitro Ocular Toxicity Testing

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The Draize test has been used on rabbits since the 1960s to evaluate the irritation caused by commercial chemicals in products such as cosmetics or hairdressings. However, since 2003, such tests, including the Draize test for cosmetics, have been prohibited in European countries because they are considered problematic to animal welfare. For this reason, replacement of *in vivo* methods with alternative *in vitro* methods has become an important goal. In this study, we established a corneal epithelial cell line co-expressing a mutant cyclin dependent kinase 4 (*CDK4*), Cyclin D1, and telomerase reverse transcriptase (*TERT*). The established cell line maintained its original morphology, and had an enhanced proliferation rate. Furthermore, the cells showed a significant, dose-dependent, decrease in viability in an irritation test using glycolic acid. These cells can now be shared with toxicology scientists, and should contribute to increasing the reproducibility of chemical testing *in vitro*.