

DEVELOPMENT OF A NEW RECONSTRUCTED HUMAN EPIDERMIS MODEL: REPRODUCIBILITY EVALUATION OF BATCHES BY THE BARRIER FUNCTION INTEGRITY TEST

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In vitro models based on reconstructed human epidermis are enjoying a growing interest from many researcher groups due to their ability to perform different tests and to replace animal models with a high in vitro/in vivo correlation. These models exhibit similar morphology of human tissue including stratum corneum structure. Skin's function barrier is attributed, mainly, to the stratum corneum, which has the function of controlling the water flux and preventing the entry of microorganisms and chemical products through the skin. Assessment of barrier function is a way to verify, indirectly, cellular differentiation and correct formation of stratum corneum, since as more cohesive and thicker is the structure formed, better the resistance of the model to sodium lauryl sulfate (SDS) will be, a substance capable of disorganize the outermost layer. Therefore, this work's objective was assessing the reproducibility of the barrier's function assay of five different batches, which is one of the quality control parameters for the skin formation process. All batches histology presented differentiated cells and were compatible with other models already validated. The integrity of developed tissues was measured though SDS concentration value able to reduce 50% of tissue's viability when compared to untreated tissue (EC50). Tissues were exposed to a SDS concentration range (0.6 - 5.0mg/mL) for 18 hours and, next, cellular viability was evaluated by MTT reduction test. It was observed that average tissue's EC50 values was 2.14 ± 0.16 mg/mL, with a coefficient of variation of 7.8%. These results are in agreement with quality parameters established in literature data and in OECD guidelines, which determine acceptable range values for EC50 between 1.0 and 3.0 mg/mL. From the results obtained, it was possible to suggest that the developed model presented reproducibility regarding the EC50 assay and it could be used as an alternative model to research use.