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CLINICAL AND REFLECTANCE MEASUREMENT COMPARISON OF TISSUE CULTURE SKIN SUBSTITUTES FORMED USING MELANOCYTES FROM DARK-SKINNED VERSUS LIGHT-SKINNED DONORS. A.T. Tuqan, K.M. Kelly, G. Aguilar, C. Sun, J.S. Nelson, Beckman Laser Institute and Medical Clinic, University of California, Irvine, CA.

Purpose: Tissue skin substitutes can be used to aid healing of patients and can be used as an experimental model of skin response. Typically, these skin substitutes are non-pigmented. Tissue culture skin substitutes of varying color would be beneficial clinically for improved patient color-match and scientifically for more accurate evaluation of dermatologic processes that may vary with skin pigmentation. We evaluate whether RAFT tissue culture skin substitutes with different color and reflectance skin measurement characteristics can be made by adding melanocytes from a dark-skinned versus a light-skinned donor. **Methods:** RAFT tissue culture specimens were constructed using human fibroblasts and rat-tail collagen for the dermal layer and human melanocytes and keratinocytes for the epidermal layer. Two different sets of RAFT specimens were created by adding melanocytes from either a dark-skinned or a light-skinned donor. Specimens were observed during formation and reflectance measurements (RM) in the 450-800 nm wavelength spectra were taken of the samples on day 13 after RAFT formation. A comparative analysis of the RM was performed to determine relative levels of melanin concentration. **Results:** During preliminary cell culture procedures, melanocytes from the dark-skinned donor secreted more melanin than melanocytes from the light-skinned donor. On day 1 of RAFT formation, melanocytes from the dark-skinned donor appeared round while melanocytes from the light-skinned donor appeared flattened with stellate processes. On days 1-13 of RAFT formation, tissue culture specimens formed using melanocytes from the 2 different donors were not appreciably different clinically, although occasional dark spots were observed in the RAFTs with melanocytes from the dark-skinned donor. RM on day 13 of RAFT formation showed no difference between RAFTs formed with melanocytes from the dark-skinned donor as compared with those made from melanocytes from the light-skinned donor. **Conclusions:** RAFT specimens made using melanocytes from dark-skinned versus light-skinned donors were not significantly different in terms of clinical appearance or melanin content as evaluated by RM.