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### Title

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**OBJECTIVE ASSESSMENT OF PORT-WINE STAIN USING DIGITAL IMAGING SYSTEM AND COLOR ANALYSIS METHOD**

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**Background and Objective:** We are interested in developing objective methods for quantifying port wine stain (PWS) skin parameters that can be used to optimize laser therapy. Attempts have been made to objectively assess PWS based on color measurements. To date, these approaches have typically been limited by a number of factors such as small test area, etc. We have developed a digital imaging system and color image analysis method to quantitatively and qualitatively evaluate PWS. This approach corrects many of the limitations associated with other modalities.

**Study Design/Materials and Methods:** Our cross-polarized digital imaging system minimizes artifacts such as glaring, shadowing, and non-uniform illumination that interfere with image fidelity. Furthermore, a color image analysis algorithm have been developed and employed to analyze PWS images.

**Results:** Images of melanin and erythema indices have been calculated to extract quantitative and qualitative information from the PWS region. The erythema and melanin index of normal skin area was also calculated to provide a basis for comparison. Conclusion: The developed device and analysis method appears to be a simple and effective method for quantitative and qualitative assessment of PWS. Studies are underway to investigate the efficacy of this system for objective evaluation of PWS blanching after each laser treatment.