

PAPER

# Chromatic techniques for *in vivo* monitoring jaundice in neonate tissues

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## Abstract

*Objective:* A chromatic method is described for providing a preliminary indication of unacceptable bilirubin levels in a newly born baby in order to avoid the development of serious mental deficiencies. The aim was to investigate the reliability of a new chromatic approach using a novel template unit for a preliminary, non-invasive monitoring of the skin tissue of newly born babies with jaundice and its capability for use with different mobile phone cameras. *Approach:* A description of the monitoring system is given along with an explanation of the monitoring technique used. Preliminary tests have been performed on 48 different neonates each being addressed by one of six different mobile

phone cameras, which were randomly available to the operating clinicians. *Main results:* The test results have a correlation ( $R^2$ ) of 0.81, a sensitivity (Sn) of 0.97, a specificity (Sp) of 0.82, a positive predictive value (PPV) of 0.95 and a negative predictive value (NPV) of 0.9. *Significance:* The significance of the results obtained is that they show the approach to have a high level of fail-safe reliability in indicating the bilirubin levels when compared with blood test results. The results also show that the approach can be used with a few different mobile phone cameras and that because of its non-invasive nature and its cost effectiveness, has the potential for remote use from a medical hospital to provide an immediate preliminary diagnosis.

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