

Buccal epithelial models for liquid-based infrared cervical diagnostics

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Near infrared microspectroscopy has yielded promising new possibilities for the early and efficient identification of cervical dysplasia. Exfoliated buccal epithelial cells (“cheek” or oral mucosal cells) serve as valuable models for the epithelial cells that appear as a principal cytological component of routine liquid-based cervical screenings.

Buccal epithelial cells were harvested with polyester fiber sterile swabs, floated into a balanced salt solution (BSS), rinsed, and diluted. HeLa cervical dysplasia cells (cell line CCL – 2, ATCC) were cultured in Minimal Essential Medium with 10% fetal bovine serum (both from ATCC). Once removed from their culture flasks, these cells were likewise rinsed in BSS. All cells were spin-deposited onto “low-e” infrared-reflective glass microscope slides. Reflectance spectra were collected using a Perkin Elmer Spectrum One – Spotlight 300 FTIR microspectrometer with a purged stage enclosure. Data were analyzed in MathWorks MATLAB, Thermo-Galactic Grams/AI, and Spectrum software programs.

We compare spectra collected from buccal epithelial cells to spectra from cultured cervical cancer cells and illustrate the unique attributes of buccal epithelial diagnostic models.