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MICRORNA MIR-146A EXPRESSION IN ORAL CANCER TISSUES

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Recent advances in basic research have shown that the expression and function of microRNAs impact on gene expression regulation networks extensively. Ever increasing new knowledge from microRNA studies should be translated into medical practice if possible. Formalin-fixed paraffin-embedded (FFPE) human cancer tissues are a huge resource for delineating the role and potential application of microRNAs in cancer pathology. However, detecting microRNA in such cancer tissues with in situ hybridization is a challenge. The goal of this study was to demonstrate the feasibility of such approach in cancer research and practice. Based on FFPE materials, we have compared fluorescent in situ hybridization (FISH) procedures with different synthetic probes: regular custom DNA oligos vs. LNA incorporated DNA oligos complementary to mature microRNA sequence, different tracer for probes: biotin vs. Digoxigenin; different visualization: direct vs. TSA amplification; different blocking reagents for endogenous peroxidase. Finally, we performed mir-146a FISH on an oral cancer tissue microarray (TMA), which contains 40 cases of oral squamous cell carcinoma (OSCC) and 10 cases of normal epithelia from human oral cavity. Spiny cells in most normal oral squamous epithelia were positive with mir-146a, while basal cells stained negative. In OSCC tissues, a correlation of decrease in mir-146a with increase in histological grade was observed. In summary, we have established reliable in situ hybridization procedures for detecting the expression of microRNA mir-146a in paraffin-embedded oral cancer tissues; this detection is useful in studies on the participation of microRNA in oral cancer pathology, and may have prognostic or diagnostic potential.