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Calcium-activated potassium channels as potential early markers of cervical cancer

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Cervical cancer is a major cause of cancer death in women in developing countries. Thus, novel early markers and therapeutic targets are urgently needed. Ion channels have gained great interest as tumor markers for different malignancies including cervical cancer. Actually, some years ago, we suggested Kv10.1 channels as cervical cancer early markers. Here, we studied the expression of another potassium channel, namely, the calcium-activated potassium channel $K_{Ca}1.1$ (KCNMA1) in cervical cancer models. Transgenic mice expressing the E7 oncogene of human papilloma virus and non-transgenic mice were treated with estradiol pellets during three or six months to induce cervical lesions. Human biopsies from patients with either non-cancerous, low- or high-grade intra-epithelium lesions or cervical cancer were also studied. mRNA and protein expression were studied by real-time RT-PCR and immunochemistry, respectively. Cervical dysplasia and cervical cancer were observed only in the transgenic mice treated with estradiol for three and six months, respectively. Estradiol treatment increased $K_{Ca}1.1$ mRNA and protein expression in both transgenic and non-transgenic mice. However, the highest levels were observed in the transgenic mice with cervical cancer. Human biopsies form non-cancerous cervix did not display $K_{Ca}1.1$ protein expression. However, increased $K_{Ca}1.1$ protein expression was observed in the rest of the human biopsies, we observed that the higher the grade of the lesion, the stronger the KCa1.1 immuno staining. These results suggest $K_{Ca}1.1$ channels as potential early cervical cancer markers.

Biography

Javier Camacho has studied ion channels involved in cancer for almost 20 years. Several patents have been filed based on the findings of his group. He focuses his research in finding early tumor markers and novel therapeutic targets for cervical, liver and lung cancer. He studies ion channel gene and protein expression in human cell lines, *in vivo* cancer models and human biopsies. His group also investigates the effect of ion channel blockers on the proliferation of human cell lines and primary cultures from human biopsies, and the preventive and therapeutic effect of such blockers on tumor development *in vivo*.

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Notes:

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