Analysis of JUN and FOS Gene Expression in Adult and Pediatric Adrenocortical Tumor Cells.

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Introduction: Adrenocortical cancer is a rare disease with a common fatal outcome. AP-1 (activator protein1) is a dimeric transcription factor that comprises members of the JUN and FOS protein families. AP-1 exerts its effect through the regulation of genes involved in proliferation and apoptosis, and may be considered a target for therapy. Objective: We analyzed the JUN and FOS gene expression in adult and pediatric adrenocortical tumor cells from adrenocortical carcinomas (ACC) and adenomas (ACA). Material and Methods: A pool of normal adrenal (Clontech), NCI-H295R and SW-13 adrenocortical tumor cell lines, adrenocortical pediatric (T7-ACA, T47-ACA, T105-ACC) and adults (T24-ACC, T36-ACC, T53-ACC) cell cultures were analyzed by 96-Well-Qiagen PCR-array. Results and Discussion: The comparison between H295R and SW-13 cell lines showed an increased of, respectively, JUN/JUND and JUNB/FOS. Pediatric tumor cell cultures showed JUN expression similar to H295R, in contrast with the increase of FOS in 2.5-fold presented in T105-ACC, a particularly aggressive pediatric tumor. When H295R was compared with adult tumor cell cultures, 1) JUN B expression was similar to T36-ACC and T53-ACC, contrasting with T24-ACC that presented lower JUNB expression (-8.0-fold); 2) T53-ACC showed 2.2-fold increased of FOS gene expression also when compared with T36-ACC or T24-ACC. In relation to normal adrenal the JUNB and FOS expression was, respectively, 1) 35-fold and 265-fold decreased in H295R cell line; 2) 63.8-fold and 835.2-fold decreased in T7-ACA pediatric tumor cells, and 3) in adult tumor cells, only JUNB in T24-ACC and FOS gene in T36-ACC were overexpressed, respectively, 180.5-fold and 1026.8-fold increased. Conclusions: There are significant differences in the genes that likely compound AP-1 transcription factor in adrenocortical tumor cells. Furthermore, these results support the evidences that pediatric and adult adrenocortical tumors present a distinct molecular profile.

Keywords: Jun expression, Fos expression, adrenocortical tumor, AP-1, gene expression. Supported by Fapesp, CNPq, Capes e PRPq-USP.