AN ADRENERGIC SIGNAL INCREASES CYSTATIN C EXPRESSION

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Introduction: Physical exercise generates multiple physical and biochemical changes in the human body that can be good indicators of workload, redox state and the state of the immune system. Type 2 cystatins (~14 kDa) are ubiquitously expressed in human tissues and are natural inhibitors of cysteine proteases. They are thought to control proteases in both intra- and extracellular compartments. Intracellular roles of Cst C include induction of apoptosis and control of antigen presentation. Objective: Previously we found secretion of salivary cystatins (S, SA, SN) correlated with exercise workload; here we extend our observations to Cst C in saliva and in cultured human submandibular gland (HSG) cells in response to adrenergic stimulus. Materials and methods: Saliva samples were collected after a single bout of treadmill exercise at maximal oxygen consumption. HSG cells were cultured in high-glucose Dulbecco’s medium supplemented with 10% fetal bovine serum. Cst C was identified by Western blot and quantified by densitometry using a two-channel infrared scanner (Odyssey®). HSG cells were incubated with different concentrations of isoproterenol (ISO) for 1 h, or with 100 µM ISO for 1 h, 4 h and 16 h. Results: Cst C in saliva increased by 56% after exercise. In HSG, endogenous Cst C expression increased by 60% and 80% upon treatment for 1 h with 100 µM and 150 µM ISO, respectively (p<0.05), and at 100 µM there was a progressive increase in Cst C expression up to 16 h (p<0.05). Conclusions: Adrenergic stimulus may drive Cst C expression in vivo and in vitro. Key words: cystatin, physical exercise, isoproterenol. Acknowledgements: CNPq, CAPES and FAPERJ.