

## **Examination of PACAP38 and PACAP27 in human malignant tumor samples and cardiac diseases**

Zalan Szanto<sup>1</sup>, Zsolt Sarszegi<sup>2</sup>, Dora Reglodi<sup>3</sup>, Krisztina Szabadfi<sup>4</sup>, Jozsef Nemeth<sup>5</sup>, Peter Kiss<sup>3</sup>, Andrea Varga<sup>3</sup>, Katalin Csanaky<sup>3</sup>, Eszter Banki<sup>3</sup>, Balazs Gaszner<sup>2</sup>, Ors Pinter<sup>2</sup>, Andrea Tamas<sup>3</sup>. <sup>1</sup>*Surgery Clinic, University of Pecs, Pecs H-7624, Hungary*, <sup>2</sup>*Heart Institute, University of Pecs, Pecs H-7624, Hungary*, <sup>3</sup>*Department of Anatomy, PTE-MTA "Lendulet" PACAP Research Team, University of Pecs, Pecs H-7624, Hungary*, <sup>4</sup>*Experimental Zoology and Neurobiology, University of Pecs, Pecs H-7624, Hungary*, <sup>5</sup>*Pharmacology and Pharmacotherapy, University of Debrecen, Debrecen H-4012, Hungary*

Pituitary adenylate cyclase activating polypeptide (PACAP) is a pleiotropic and multifunctional neuropeptide, having important roles in various physiological processes. Recent trends in PACAP research point to the clinical introduction of PACAP or its analogs/fragments possibly in the near future. Recently, we have shown the presence of PACAP in human plasma, milk, placenta and follicular fluid samples. However, relatively few data are available on PACAP in human tissues from patients with different disorders. The aim of the present study was to determine the tissue concentration of PACAP38-like immunoreactivity (LI) and PACAP27-LI in different primary non-small cell lung cancer (NSCLC), colon tumor samples and in cardiac muscle samples from patients suffering from ischemic heart disease and valvular disorders with radioimmunoassay (RIA) examination. We also labeled the PAC1 receptors in human cardiac cells. Almost all samples showed significantly higher PACAP38-LI compared to PACAP27-LI. We found significantly lower level of PACAP38-LI and PACAP27-LI in tumoral and peripheral samples compared to normal healthy tissue in both lung and colon cancers. Further investigations are necessary to describe the exact function of PACAP in oncogenesis. We showed that PACAP38-LI and PACAP27-LI are significantly higher in ischemic heart disorders compared to valvular abnormalities suggesting that PACAP might play a role in ischemic heart diseases. Supported by OTKA (K72592, 75965, CNK78480), TAMOP (4.2.1.B-10/2/KONV-2010-002, 4.2.2.B-10/1-2010-0029), Bolyai Scholarship, Richter Foundation, PTE AOK Research Grant KA-4039/10-26, PTE-MTA "Lendulet" Program.