

**Martinez A, Arias J, Bassuk JA, Wu H, Kurlansky P, Adams JA. Adrenomedullin is increased by pulsatile shear stress on the vascular endothelium via periodic acceleration (pGz). *Peptides*. 2008;29:73-8**

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Periodic acceleration (pGz) is produced by a platform which moves the supine body repetitively in a headward to footward direction. The imparted motion produces pulsatile shear stress on the vascular endothelium. Pulsatile shear stress on the vascular endothelium has been shown to elicit production of a host of cardioprotective, cytoprotective mediators. The purpose of this study was to ascertain if pGz also enhances production of adrenomedullin (AM) in normal healthy swine. Twelve pigs (weight range 20-30 kg) were anesthetized, intubated and placed on conventional mechanical ventilation. All animals were secured to the motion platform. In one group (pGz) (n=7) was activated for 1h, and monitored for an additional 3h. A control group (CONT) (n=5) served as time control. Arterial blood gases, hemodynamic measurements, and serum for AM, interleukin 4, 6 and thromboxane B(2) (TBXB2) were measured at baseline, immediately after pGz, and 3h after pGz had been discontinued. There was no significant change from baseline value in IL-4, IL-6 or TBXB2. Mean arterial blood pressure decreased in pGz-treated animals from 115 $\pm$ 10 at baseline to 90 $\pm$ 8 after 60 min of pGz ( $p<0.01$ ). AM levels increase from 776 $\pm$ 176 pg/ml baseline to 1160 $\pm$ 68 pg/ml immediately after pGz, and remained elevated to 1584 $\pm$ 160 pg/ml, 3h after pGz ( $p<0.01$  vs. BL). This is the first report of AM-enhanced production using a non-invasive method of increasing pulsatile shear stress on the vascular endothelium. pGz increases production of AM in normal healthy swine. These changes are independent of IL-4, IL-6 or TBXB2 production.