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# Expressions of adenosine A<sub>2A</sub> receptors in coronary arteries and peripheral blood mononuclear cells are correlated in coronary artery disease patients

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## Abstract

### Background

Altered coronary blood flow occurs in patients with coronary artery disease (CAD). Adenosine strongly impacts blood flow mostly via adenosine A<sub>2A</sub> receptor (A<sub>2A</sub>R) expressed in coronary tissues. As part of a systemic regulation of the adenosinergic system, we compared A<sub>2A</sub>R expression in situ, and on peripheral blood mononuclear cells (PBMC) in CAD patients.

### Methods and results

Aortic and coronary tissues, and PBMC were sampled in 20 CAD patients undergoing coronary artery bypass surgery and consecutively included. Controls

were PBMC obtained from 15 healthy subjects. Expression and activity of A<sub>2</sub>AR were studied by Western blotting and cAMP measurement, respectively. A<sub>2</sub>AR expression on PBMC was lower in patients than in controls ( $0.83 \pm 0.31$  vs  $1.2 \pm 0.35$  arbitrary units;  $p < 0.01$ ), and correlated with A<sub>2</sub>AR expression in coronary and aortic tissues (Pearson's  $r$ : 0.77 and 0.59,  $p < 0.01$ , respectively). Basal and maximal cAMP productions following agonist stimulation of PBMC were significantly lower in patients than in controls ( $120 \pm 42$  vs  $191 \pm 65$  and  $360 \pm 113$  vs  $560 \pm 215$  pg/10<sup>6</sup> cells,  $p < 0.05$ , respectively). In CAD patients, the increase from basal to maximal cAMP production in PBMC and aortic tissues was similar (+300% and +246%, respectively).

## **Conclusion**

Expression of A<sub>2</sub>AR on PBMC correlated with those measured in coronary artery and aortic tissues in CAD patients, A<sub>2</sub>AR activity of PBMC matched that observed in aorta, and A<sub>2</sub>AR expression and activity in PBMC were found reduced as compared to controls. Measuring the expression level of A<sub>2</sub>AR