

## Concurrent Session 5: Coronary Heart Disease

### Determinants of platelet aggregation – implications for nutrition intervention trials

EH Clayton, M Phang, ML Garg

*Nutraceuticals Research Group, University of Newcastle, NSW 2308*

**Background** – Increased platelet aggregation or “stickiness” is associated with the progression of coronary atherosclerosis, coronary thrombosis and myocardial infarction (MI). Inhibiting platelet aggregation reduces the risk of MI. Platelet aggregation tendency increases with age<sup>1</sup> and with increased risk of heart disease<sup>2</sup> and may be reduced by a number of food groups including seafood, garlic, tomato or chilli<sup>3</sup>.

**Objective** – To determine background factors that influence the tendency of platelets to aggregate using a whole-blood impedance aggregometer.

**Design** – Exploratory study examining whole-blood collagen stimulated impedance platelet aggregation in 80 participants after an overnight fast and a light breakfast. Background details including participants’ age, gender, BMI, garlic, chilli and alcohol intake were recorded and correlated with aggregation.

**Outcomes** – Whole-blood platelet aggregation was not related to smoking, garlic, chilli or alcohol intake or age, but was significantly ( $p < 0.001$ ) higher in female participants than males (Aggregation area under the curve =  $34.1 \pm 0.85$  versus  $27.0 \pm 0.94$  Ohm.mins respectively). Although male participants were heavier, after controlling for BMI in a multiple regression analysis, whole-blood platelet aggregation was still significantly predicted by sex.

**Conclusions** – Gender appears to be an important determinant of platelet aggregation. The gender of participants is likely to have implications on the response in platelet aggregation in drug and/or nutrition intervention trials. Future studies examining the effects of food on platelet aggregation should consider matching groups based on gender.

#### References

1. Bulpitt, CJ. Secondary prevention of coronary heart disease in the elderly. *Heart* 2005;91:396-400.
2. Fuster, V, Badimon, L, Badimon, JJ, Chesebro, JH. The pathogenesis of coronary artery disease and the acute coronary syndromes (1). *N Engl J Med* 1992;326:242-50.
3. Allison, GL, Lowe, GM, Rahman, K. Aged garlic extract and its constituents inhibit platelet aggregation through multiple mechanisms. *J Nutr* 2006;136:782S-788S.

---

### Adiponectin blood pressure and weight loss

JB Keogh, PM Clifton

*CSIRO Human Nutrition, Adelaide, SA 5000*

**Background** – Adiponectin is reduced in obesity and may be associated with atherosclerosis and coronary artery disease. Hypoadiponectinemia may also contribute to the development of obesity-related hypertension.

**Objective** – To determine the blood pressure and adiponectin responses to weight loss.

**Design** – Weight loss study in 25 obese men and women over a 12 month period.

**Outcomes** – Weight loss after 3 months of energy restriction was 7% ( $7.7 \pm 3.4$  kg) and 5% at 12 months. Resting systolic blood pressure (SBP) at baseline was  $123 \pm 13$  mmHg which was lower after weight loss at 3 months ( $114 \pm 16$  mmHg,  $P < 0.05$ ) but was not different at 52 weeks. Adiponectin fell by 4 % at 3 months ( $p = 0.1$ ) but rose by nearly 20% at 12 months ( $P < 0.05$ ). There was a negative correlation between adiponectin and SBP ( $r = -0.427$ ,  $P \leq 0.05$ ) at baseline which remained after adjustment for BMI. Diastolic blood pressure (DBP) was also negatively correlated with adiponectin. These correlations were not observed at 3 months. After 52 weeks SBP was negatively correlated with adiponectin ( $r = -0.554$ ,  $P \leq 0.05$ ) which was lost after adjustment for BMI. After 52 weeks DBP was also negatively correlated with adiponectin ( $r = -.610$ ,  $P \leq 0.05$ ) but after adjustment for BMI this relationship was weaker ( $r = -.528$ ,  $P = 0.08$ )

**Conclusions** – There is an inverse relationship between adiponectin and blood pressure that appears to be disrupted after short-term weight loss but is re-established at 52 weeks when adiponectin rises.