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The effect of cold-water prawn consumption on plasma LDL-cholesterol

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The idea that the consumption of dietary cholesterol, in such foods as eggs and shellfish, increases risk of CHD by increasing blood cholesterol is a popular misconception that is scientifically unfounded[1]. While the slow but sure realisation of this fact has prompted a recent change in dietary advice to relax previous restrictions on egg consumption, the intake of shellfish, and particularly prawns, continues to be negatively influenced by this fallacy.

A study was designed to examine the influence of cold-water prawns on plasma lipids and lipoproteins. Twenty-one healthy male subjects (aged 20–70 years) were recruited from university staff and students. The subjects were normolipidaemic non-obese weight-stable and non-smoking. Exclusion criteria included the taking of dietary supplements or medication known to affect lipid metabolism, shellfish allergy and recent weight loss (>3 kg in the preceding 3 months). The study was of a randomised controlled cross-over design, in which subjects were instructed to incorporate 225 g cold-water prawns or the equivalent weight of crab sticks (control), which contained between 300 and 400 mg cholesterol and a trace of cholesterol respectively, into their normal habitual diet for 4 weeks. The prawn and crab-stick intervention legs were separated by 4 weeks, during which the subjects maintained their habitual diet before switching to the alternate treatment. Outcome measures included plasma lipids (total cholesterol (TC), TAG), lipoprotein-cholesterol (C; HDL-C and LDL-C were calculated) and apoA-I and apoB), which were measured by enzymic assays using an I-LAB 650 analyser (Instrumentation Laboratory UK, Warrington, Ches., UK), dietary intake, body weight and blood pressure.

There was no significant difference in the intake of energy or macronutrients between the prawn and control legs but a significantly higher intake of dietary cholesterol with the prawns *v*. the control (794 mg/d *v*. 275 mg/d; $P<0.001$). Body weight and blood pressure were similarly unaffected by the interventions. There was no significant difference in plasma TC, TAG, HDL-C, LDL-C or apoA-I and apoB between the prawn and control legs. The Figure illustrates the pre- and post-study distribution of plasma LDL-C with the prawns and the control.

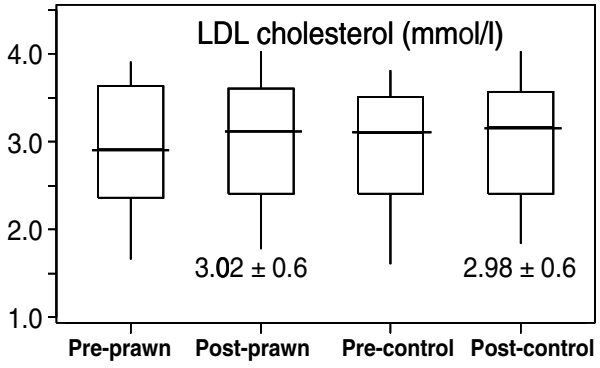

Figure. Box and whisker plots showing the pre- and post-study distribution of plasma LDL-C. Values represent quartiles with medians (□) and arithmetic means (—) and standard deviations represented by vertical bars.

These data clearly show that the consumption of prawns, delivering an additional 300–400 mg dietary cholesterol/d, was not associated with significant changes in total plasma or LDL-C. The consumption of cold water prawns should therefore not be restricted on the grounds that they exert an adverse effect on blood cholesterol.

1. Gray J & Griffin B (2009) *Nutr Bull* **34**, 66–70.