

**Title:** Tolerance in raw egg allergy on consumption of cooked egg

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### *Summary*

Increasing numbers of children are being diagnosed with food allergies including egg allergy. Australia has one of the highest rates of infantile food allergy worldwide, with 9% of one year old infants shown to have raw egg allergy. These children may benefit from being able to introduce baked goods containing small amounts of egg into their diet.

This project was nested within the HealthNuts study, a large population-based study of 5,300 one year old infants. All infants underwent a screening test and those who were able to tolerate baked egg were encouraged to eat egg in baked egg products (to the equivalent of less than a two-egg baked cake) at least three times per week but to avoid raw and semi-cooked eggs, as they had not passed a raw egg challenge. Those who did not pass the baked egg challenge were asked to exclude all egg (both raw and baked) from their diets. All children were offered a raw egg challenge one year later (at age two years).

As part of this study, 161 raw egg allergic infants underwent an oral food challenge to baked egg. Of these, 124 (77%) were tolerant to baked egg and 27 (16.8%) were allergic to baked egg. The remaining 10 (6.2%) challenges were inconclusive.

Of those 151 infants with conclusive baked egg challenge results at age one year, 111 completed an oral food challenge to raw egg at age two years, with 58.6% of infants still allergic to raw egg and the remainder having outgrown their egg allergy.

Infants who were allergic to baked egg at age one year were more likely to be positive on challenge to raw egg at age two (80% vs 53.8%;  $p=0.032$ ). Baked egg consumption was also associated with allergy status at two years of age. Those infants who ate little or no baked egg products during the study were less likely to have recovered from their raw egg allergy at the time of the two year old challenge compared to those who ate baked egg frequently (32.5% vs 53.3%;  $p=0.053$ ).

The implications for these results are that significant numbers of children (8.9% of one year olds) have raw egg allergy. Eating baked egg products may hasten tolerance to raw egg, or alternatively it defines a group of children more likely to outgrow egg allergy. The ability to eat baked egg appears to act as a prognostic indicator of a resolution to egg allergy.