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## Methodology for quantifying the intake of live microbes in the diet of Australian adults

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Interest in the consumption of food containing live microbes (LM) as a component of dietary patterns has accelerated, due to potential positive contributions to health and chronic disease risk, including cardiovascular disease (CVD)<sup>(1,2)</sup>. There are different patterns of LM consumption, including through the intake of probiotics or fermented foods or via a broader spectrum of foods that may harbour microbes, such as raw, unpeeled fruits and vegetables<sup>(3)</sup>. To date, no study has quantitatively assessed potential intake of LM in a sample of Australians. The aim was to quantify presence of LM for common foods and beverages consumed in Australia, using the Australian Eating Survey<sup>®</sup> (AES) and AES-Heart<sup>®(4,5)</sup> food frequency questionnaires as the dietary assessment tool. Quantification of potential live microbial content (per gram) was conducted in accordance with the methodology outlined by Marco et al.<sup>(3)</sup>. Briefly, foods were assigned to categories with LM ranges defined as low (Low; < 10<sup>4</sup> CFU/g), medium (Medium; 10<sup>4</sup>–10<sup>7</sup> CFU/g), or high (High; > 10<sup>7</sup> CFU/g) for level of live microbes<sup>(3)</sup>. These categories were based on the expected prevalence of viable microorganisms within different food matrices. Specifically, pasteurised food products are characterised as having microbial concentrations Low < 10<sup>4</sup> CFU/g. In contrast, fresh fruits and vegetables, consumed unpeeled exhibit a microbial range considered medium (Medium; 10<sup>4</sup>–10<sup>7</sup> CFU/g), while unpasteurised fermented foods and probiotic supplemented foods exhibit significantly higher microbial content (High > 10<sup>7</sup> CFU/g). Based on this methodology, the estimated quantities of live microbes in 400 foods and beverages (including individual products and mixed dishes) within the AES and AES-Heart<sup>®(4,5)</sup> FFQs were determined and summarised across 22 food groups using the 2-digit codes from the 2011–2013 AUSNUT database<sup>(6)</sup>. Preliminary results indicate the Low group was the most represented, out of the 400 foods 369 belong to this category. The food groups that represent the highest percentages in the Low group were vegetable products and dishes (13.8%) followed by meat, poultry, and game products and dishes (13.6%). The Medium group was composed by 25 items, with the most representative food groups being fruit products and dishes (48%). In the High group, the representative food groups were dairy and meat substitutes (e.g., soy yoghurt; 66.7%) and milk products and dishes (33.3%). The creation of this database will facilitates new research opportunities to investigate relationships between intake of live microbes and health outcomes, including CVD. Future research into how dietary pattern rich in live microbes related to chronic disease risk factors, such as reduced BMI, blood pressure, plasma lipids and glucose, in the Australian population could offer new insights into risk factor management through LM dietary interventions.

### References

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