

## Electronic Supplementary Information

### *Cognitive function and mood assessment – short description of administered tests*

*Word presentation.* A list of 15 words, matched for frequency and concreteness, was presented in a random sequence on the centre of the screen at a rate of one word every 2 s for the participant to remember.

*Simple reaction time.* The participant was instructed to press the YES response button as quickly as possible every time the word ‘YES’ was presented on the screen. Thirty stimuli were presented with a varying inter-stimulus interval of between 1 and 4 s. Reaction times were recorded in milliseconds (ms).

*Digit vigilance.* A target digit was randomly selected and displayed to the right of the screen. A series of digits were presented in the centre of the screen at the rate of 2.5 digits per second. The participant was required to press the YES button as quickly as possible every time the digit in the series matched the target digit. The task measures were the percentage of targets detected (accuracy), the average reaction time (ms) and the number of false-positives (false alarms) made.

*Choice reaction time.* Either the word ‘YES’ or the word ‘NO’ was presented on the screen and the participant was instructed to press the corresponding YES/NO button as quickly as possible. There were 30 trials with a varying inter-stimulus interval of between 1 and 4 s. The task measures were the percentage of correct responses (accuracy) and the average reaction time to the stimuli (ms).

*Spatial working memory.* A simple pictorial representation of a house was presented on the screen with four of its nine windows illuminated. The participant was instructed to memorize the

positions of the illuminated windows. For each of the subsequent presentations of the house the participant had to decide whether or not the one window which was illuminated was also illuminated in the original presentation. Participants recorded their response by pressing the YES or NO button as appropriate and as quickly as possible. The measures were the percentage of correctly identified stimuli (accuracy) and the average reaction time (ms).

*Numeric working memory.* A series of five digits was presented one after the other for the participant to hold in their memory. This was followed by a series of 30 probe digits. For each digit the participant was required to decide whether or not the digit was from the original series and indicate their choice by pressing either the YES or NO button as appropriate and as quickly as possible. The measures were the percentage correctly identified stimuli (accuracy) and the average reaction time (ms).

*Delayed word recognition.* The original 15 words (presented in *Word presentation*) plus 15 distracter words were presented one at a time in a randomized order. For each word the participant indicated whether they recognized the word as being from the original list of words by pressing the YES or NO button as appropriate. The measures were the percentage of correctly identified words (accuracy) and the average reaction time (ms).

From these tests three composite domain scores can be derived: Power of Attention (a measure of attention and psychomotor/information processing speed; by summing reaction times from the Simple reaction time, Choice reaction time and Digit vigilance tasks), Continuity of Attention (a measure of attentional accuracy; by summing accuracy and error measures from the Choice reaction time and Digit vigilance tasks), Quality of Working Memory (a measure of working

memory accuracy; by summing the accuracy scores from the Numeric and Spatial working memory tasks)<sup>37</sup>.

In addition, participants completed the Bond–Lader mood scale<sup>39</sup>, which is made up of 16 × 100 mm visual analogue mood scales (VAMS) with the end-points anchored by antonyms. Three mood measures are derived as recommended by the authors, with scores on each ranging from 0 to 100: ‘alertness’ (from individual VAMS of alert-drowsy, attentive-dreamy, lethargic-energetic, muzzy-clearheaded, well-coordinated-clumsy, mentally slow-quick witted, strong-feeble, interested-bored, incompetent-proficient); ‘calmness’ (calm-excited, tense-relaxed); and ‘contentedness’ (contented-discontented, trouble-tranquil, happy-sad, antagonistic-friendly, withdrawn-sociable). These measures of mood have been shown to be sensitive to changes induced by acute consumption of flavonoid rich natural substances<sup>73</sup>.