臺北醫學大學 100 學年度博士班招生入學考試

營養應用科學試題

注意事項	一、本試題共五大題，共計 100 分。 二、請將正確答案依題次作答於答案用卷內。 三、試題答錯者不倒扣；題次號碼錯誤或不按順序或鉛筆作答，不予計分。

一、 請說明與解釋以下各問題(共 25%)

1. 資料統計中，欲使用 *t* 檢定時，需注意資料數據有哪些限制？(5%)

2. 何謂 IRB (institutional review board)？並說明其意義。(5%)

3. 何謂 nutraceutical？請舉例說明。(5%)

4. α-helix (5%)

5. glycation (5%)

二、 在許多的研究中經常使用 column chromatography 法來萃取及精製樣品，其中 gel filtration 的原理為何？另一方面，試從 V_0 與 V_t 探討理論值與實際值之間的差異性及其影響因素。(20%)

三、 NASH (non-alcoholic steatohepatitis)在臨床上的徵狀為何？從營養的角度上如何改善或延緩 NASH 病患的疾病進程？(20%)

四、 何謂 nutrigenomics？並舉例說明其於疾病預防或治療上的運用。(10%)

五、 請就下面的表格與圖表的數據，寫出你對結果的解讀。(共 25%)

1. 請從以下兩個表格的數據中，至少寫出 5 個重點。(15%)

Effects of one serving of mixed nuts on health in patients with the metabolic syndrome.

Table 2 Baseline energy and nutrient intake and 12-week changes in the two intervention groups.[a]

	Nut diet group ($n = 25$)		Control diet group ($n = 25$)		Treatment effect[b]	
	Baseline[c]	Change	Baseline[c]	Change	Differences	*P*
Energy (kcal/day)	2094 ± 554	−209 (−376 to −41)[d]	1993 ± 466	−393 (−552 to −234)[d]	184 (−41 to 409)	0.106
Carbohydrate (%)	41.3 ± 6.8	0.2 (−2.2 to 2.7)	42.4 ± 6.1	3.5 (−0.1 to 6.9)	−3.2 (−7.4 to 0.9)	0.130
Protein (%)	18.9 ± 3.1	0.3 (−1.2 to 1.8)	18.6 ± 3.4	2.6 (0.8 to 4.3)[d]	−2.3 (−4.5 to −0.0)	0.046
Total fat (%)	35.5 ± 5.9	0.8 (−1.6 to 3.2)	35.7 ± 5.9	−4.6 (−7.4 to −1.8)[d]	5.4 (1.8 to 8.9)	0.004
Saturated	10.5 ± 2.5	−2.1 (−3.6 to −0.7)[d]	10.5 ± 2.8	−2.4 (−3.6 to −1.2)[d]	0.3 (−1.5 to 2.1)	0.748
Monounsaturated	16.6 ± 4.2	0.6 (−0.6 to 1.9)	17.0 ± 3.4	−2.1 (−3.5 to −0.8)[d]	2.8 (1.0 to 4.6)	0.003
Polyunsaturated	5.4 ± 1.7	2.1 (1.1 to 3.0)[d]	5.0 ± 1.3	−0.2 (−0.9 to 0.5)	2.3 (1.1 to 3.5)	<0.001
Cholesterol (mg/day)	344 ± 90	−101 (−151 to −52)[d]	306 ± 85	−28 (−85 to 28)	−73 (−147 to −0)	0.050
Alcohol (%)	4.3 ± 5.6	−1.3 (−2.3 to −0.4)[d]	3.3 ± 5.9	−1.4 (−3.9 to 1.0)	0.1 (−2.5 to 2.7)	0.923
Fiber (g/day)	20.5 ± 7.7	2.1 (−1.4 to 5.6)	19.5 ± 8.7	1.9 (−7.4 to 11.2)	0.1 (−9.7 to 10.0)	0.977

[a] Values are means ± SD or mean changes (95% CI).
[b] Differences in changes between groups (Nut diet versus Control diet), means (95% CI).
[c] No significant between-group differences at baseline.
[d] Significantly different from baseline ($P < 0.05$) by paired *t*-test.

Table 3 Baseline levels and 12-week changes in adiposity, lipid profiles and glycemic control in the two groups.[a]

	Nut diet group ($n = 25$)		Control diet group ($n = 25$)		Treatment effect[b]		Adjusted treatment effect[c]	
	Baseline[d]	Change	Baseline[d]	Change	Differences	*P*	Differences	*P*
Weight (kg)	86.4 ± 13.6	−2.2 (−3.4 to −0.9)[e]	79.9 ± 10.9	−1.5 (−2.4 to −0.6)[e]	−0.7 (−2.1 to 0.8)	0.363		
Waist circumference (cm)	105.6 ± 7.8	−3.8 (−5.8 to −1.9)[e]	101.3 ± 8.7	−2.7 (−4.4 to −1.0)[e]	−1.1 (−3.6 to 1.3)	0.362	−0.4 (−2.3 to 1.5)	0.678
Body fat (%)	36.5 ± 6.3	−1.9 (−2.9 to −0.9)[e]	34.4 ± 8.3	−1.1 (−1.9 to −0.3)[e]	−0.8 (−2.1 to 0.4)	0.195	−0.6 (−1.8 to 0.6)	0.318
Systolic blood pressure (mmHg)	145 ± 15	−6 (−11 to −2)[e]	137 ± 19	−10 (−16 to −5)[e]	4.2 (−2.9 to 11.2)	0.238	4.5 (−2.6 to 11.6)	0.208
Diastolic blood pressure (mmHg)	86 ± 8	−3 (−5 to −1)[e]	82 ± 10	−4 (−8 to −0.7)[e]	1.6 (−2.7 to 5.8)	0.466	2.0 (−2.2 to 6.3)	0.337
Total cholesterol (mmol/L)	5.38 ± 0.79	−0.16 (−0.42 to 0.11)	5.82 ± 1.30	−0.48 (−0.83 to −0.14)[e]	0.33 (−0.09 to 0.75)	0.124	0.38 (−0.03 to 0.79)	0.071
HDL cholesterol (mmol/L)	1.17 ± 0.29	−0.02 (−0.10 to 0.06)	1.12 ± 0.26	−0.02 (−0.11 to 0.06)	0.01 (−0.11 to 0.12)	0.910	−0.01 (−0.12 to 0.11)	0.923
LDL cholesterol (mmol/L)	3.45 ± 0.71	−0.13 (−0.34 to 0.08)	3.79 ± 1.03	−0.36 (−0.62 to −0.10)[e]	0.23 (−0.09 to 0.56)	0.154	0.29 (−0.01 to 0.60)	0.058
Triglycerides (mmol/L)	1.53 ± 0.70	−0.02 (−0.23 to 0.18)	1.69 ± 0.95	−0.07 (−0.45 to 0.32)	0.04 (−0.38 to 0.47)	0.836	0.06 (−0.37 to 0.05)	0.785
Fasting glucose (mmol/L)	5.82 ± 0.52	−0.06 (−0.22 to 0.11)	5.82 ± 0.58	−0.04 (−0.26 to 0.18)	−0.01 (−0.28 to 0.25)	0.928	0.01 (−0.25 to 0.28)	0.920
2-h postload glucose (mmol/L)	9.32 ± 2.70	−0.36 (−1.39 to 0.68)	8.80 ± 2.32	0.04 (−0.82 to 0.91)	−0.40 (−1.71 to 0.92)	0.544	−0.34 (−1.68 to 1.01)	0.278
Insulin (μU/mL)	8.01 ± 3.59	−2.07 (−3.51 to −0.63)[e]	6.01 ± 3.98	0.53 (−0.96 to 2.02)	−2.60 (−4.62 to −0.59)	0.013	−2.44 (−4.48 to −0.40)	0.020
HOMA-Insulin resistance	2.10 ± 1.01	−0.58 (−0.98 to −0.18)[e]	1.56 ± 1.14	0.14 (−0.28 to 0.55)	−0.72 (−1.28 to −0.16)	0.013	−0.67 (−1.24 to −0.11)	0.021
Resting energy expenditure (kJ/day)	7157 ± 1190	−54 (−340 to 232)	6851 ± 1023	−11 (−188 to 165)	−42 (−370 to 285)	0.796	−9 (−305 to 323)	0.955
Stool fat (g/24 h)	3.7 ± 1.8	0.3 (−0.4 to 1.0)	4.9 ± 2.9	−1.6 (−3.0 to −0.1)[e]	1.9 (0.3 to 3.5)	0.019	1.9 (0.2 to 3.5)	0.026

[a] Values are means ± SD or mean changes (95% CI) unless indicated otherwise.
[b] Differences in changes between groups (Nut diet versus Control diet), means (95% CI).
[c] Differences in changes between groups (Nut diet versus Control diet) adjusted by changes in body weight, means (95% CI).
[d] No significant between-group differences at baseline.
[e] Significantly different from baseline ($P < 0.05$) by paired *t*-test.

2. 請由下圖，說明各種圖型所代表的意義為何？至少寫出 3 點。(10%)

Association between body-mass index and risk of death in more than 1 million Asians.

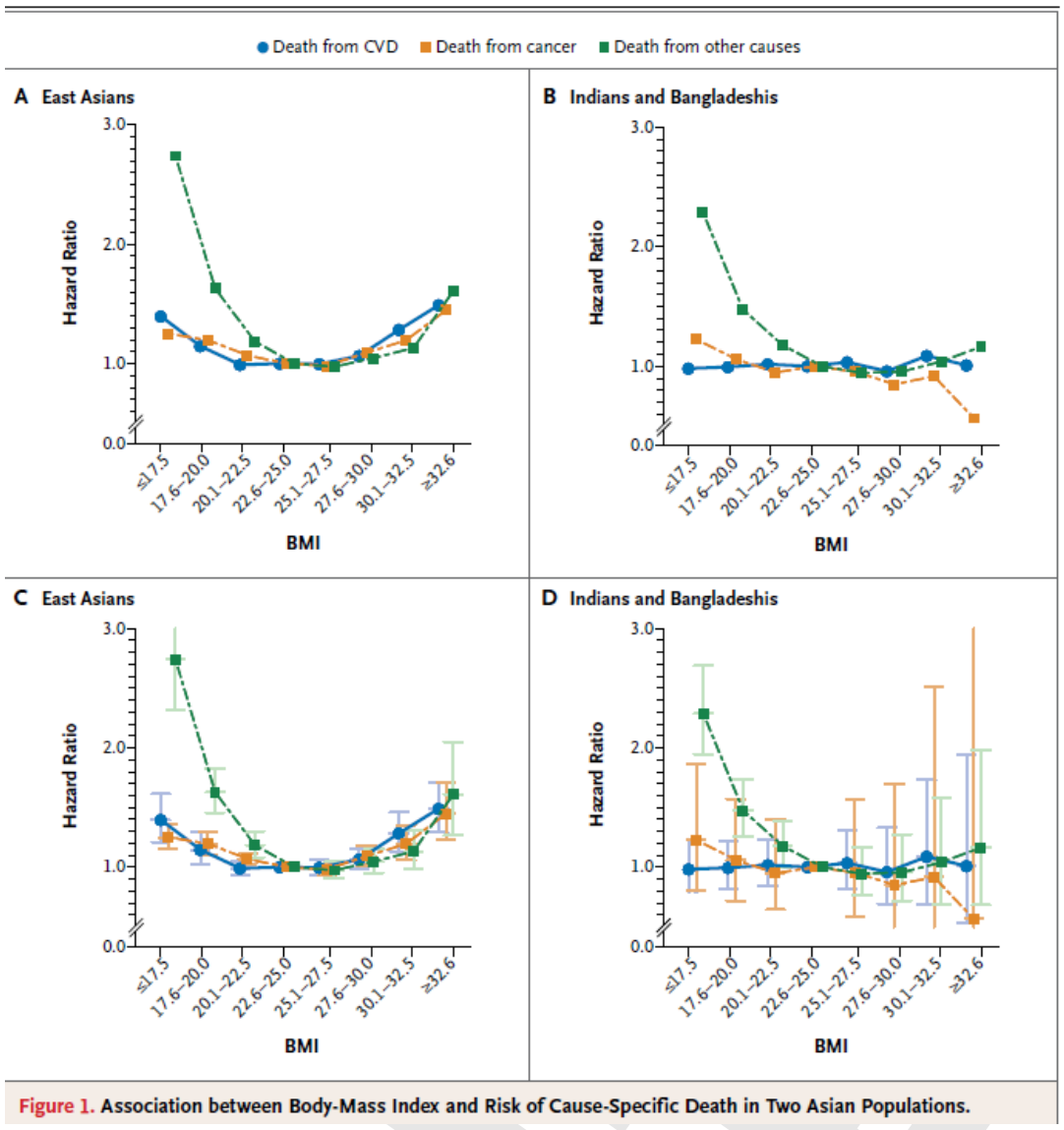

Figure 1. Association between Body-Mass Index and Risk of Cause-Specific Death in Two Asian Populations.