Proving that no matter what the brands of balanced nutritional formulas is, it can maintain or improve the tube-fed patient's nutritional condition.

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Introduction

As the number of patients who receive enteral tube feeding is increasing. More and more commercial formula products are available in market..

Purpose

To evaluate that difference between the brands of balanced nutritional formulas for enteral feeding could maintain or improve the patient's nutritional status.

Subjects and Methods

Subject who have been completely tube-fed for a consecutive of 3 months and must be > 20 year were recruited from 6 nursing home. We conducted those study by time series study design during 3 months period. Observation period (month 0), no change to their original tube feeding formula. Investigators (or the patients' guardian) will record the patients' amount of intake, condition of digestion and the condition of stool.

Intervention period (month 1), our trial tube feeding formula are assigned to our subjects. The blood sample is examined by Laboratory of TMUH (Taipei Medical University Hospital).

We performed paired t-test and one-way ANOVA by using SAS for Windows 9.01 statistic software. Moreover, we use Scheffe for post-hoc analysis. When $p < 0.05$ means significant difference in statistic.

Results and Discussion

Table 1 is a list of three major nutrients of 100g of tube feeding formula. There were total 138 subjects (55 men and 83 women). The total average of age is 78.5 ± 11.9 years, height is 154.5 ± 8.4cm, weight is 47.9 ± 8.4kg, BMI is 20.1 ± 3.6; Table 2 is the characteristic. Formula 1: Cr, GPT; formula 2: alb, bun, Cr, GPT, GNRI; formula 3: BW, BMI, BUN, HGB; formula 4: BUN, GOT; formula 5: alb, GPT, HGB, GNRI; formula 7: HGB increase significantly. Formula 5: BUN, Cr decrease significantly (Table 3).

There are no significant difference existed among those balanced nutritional formulas and those formula could maintain or improve the patient's nutritional condition.

Table 1：Three major nutrients of 100g of tube feeding formula[1]

	Calories (kcal)	Carbohydrate (g)		Protein (g)		Fat (g)	
formula 1	447	59.0	(52.8%)	18.0	(16.1%)	17.0	(34.2%)
formula 2	464.8	63.0	(54.2%)	16.7	(14.3%)	16.3	(31.6%)
formula 3	444	58.	(52.3%)	16.7	(15.0%)	16.2	(32.8%)
formula 4	455	58.9	(51.8%)	18.0	(15.8%)	17.0	(33.6%)
formula 5	416	62.6	(60.2%)	16.4	(15.8%)	14.1	(30.5%)
formula 6	463	58.0	(50.1%)	18.5	(16.0%)	17.4	(33.8%)
formula 7	448	53.5	(47.8%)	17.4	(15.5%)	15.8	(31.7%)

[1]values are expressed as number (%)

Table 2：The charteristics of subjects[1,2]

	n	age(yrs)	BH(cm)	BW(kg)	BMI(kg/m^2)
formula 1	16	80.8 ± 11.0	154.1 ± 6.5	53.4 ± 10.3	22.6 ± 5.0
formula 2	22	80.5 ± 11.2	157.2 ± 11.7	47.5 ± 9.1	19.2 ± 2.9
formula 3	20	82.7 ± 9.4	153.2 ± 8.7	43.2 ± 6.8	18.5 ± 3.0
formula 4	23	80.5 ± 9.1	156.7 ± 8.5	43.1 ± 10.6	17.5 ± 3.5
formula 5	15	73.7 ± 12.9	149.1 ± 7.8	47.1 ± 7.1	21.4 ± 3.9
formula 6	21	73.5 ± 16.4	158.5 ± 8.3	53.7 ± 8.5	21.4 ± 3.2
formula 7	21	77.7 ± 13.6	153.0 ± 7.7	47.0 ± 6.7	20.2 ± 3.5
total	138	78.5 ± 11.9	154.5 ± 8.4	47.9 ± 8.4	20.1 ± 3.6

[1]values are expressed as mean ± SD; [2]BW, Body weight; BH, Body height; BMI, Body mass index, BW (kg) / BH (m^2)

Table 3：Receiving different formulas for tube feeding: before-after difference in weight, BMI, blood biochemical index[1,2]

	BW	BMI	Alb	BUN	Cr	GOT	GPT	HGB	HCT	GNRI
formula 1	0.7 ± 2.3	0.3 ± 1.0	0.1 ± 0.4	0.9 ± 4.9	-0.1 ± 0.1*	1.4 ± 10.9	5.6 ± 8.9*	-0.3 ± 1.3	-0.8 ± 3.4	1.8 ± 4.1
formula 2	0.4 ± 3.0	0.2 ± 1.3	0.5 ± 0.4*	6.1 ± 4.6*	0.1 ± 0.1*	18.9 ± 73.8	12.1 ± 26.5*	0.2 ± 1.0	0.1 ± 3.0	7.1 ± 6.1*
formula 3	1.8 ± 1.6*	0.8 ± 0.6*	0.1 ± 0.5	6.1 ± 7.0*	0.0 ± 0.1	4.1 ± 7.7*	2.8 ± 8.1	0.5 ± 0.9*	1.2 ± 2.6	3.1 ± 7.1
formula 4	0.2 ± 0.9	0.1 ± 0.4	0.1 ± 0.4	8.6 ± 7.0*	0.0 ± 0.1	4.0 ± 8.0*	3.1 ± 7.6	-0.4 ± 1.2	-1.4 ± 3.6	0.9 ± 6.0
formula 5	-0.4 ± 2.5	-0.2 ± 1.1	0.4 ± 0.3*	-1.7 ± 2.0*	-0.1 ± 0.1*	4.5 ± 9.0	9.7 ± 10.8*	0.5 ± 0.7*	0.8 ± 1.9	6.0 ± 5.6*
formula 6	0.3 ± 2.1	0.1 ± 0.8	-0.1 ± 0.3	-0.2 ± 3.2	0.0 ± 0.1	-2.3 ± 6.3	-3.3 ± 9.1	0.1 ± 1.3	0.5 ± 3.5	-1.4 ± 4.4
formula 7	0.4 ± 2.1	0.1 ± 0.9	0.0 ± 0.3	-1.9 ± 7.6	0.1 ± 0.1	2.2 ± 21.2	-1.2 ± 13.1	0.4 ± 0.9*	0.1 ± 2.5	0.7 ± 4.1

[1]values are expressed as mean ± SD

[2]BW, body weight: BMI, body mass index, body weight (kg) / body height (m^2);Alb, albumin; BUN, blood urea nitrogen; Cr, creatinine; GOT, glutamate oxaloacetate transaminase; GPT,glutamic pyruvic transaminase; HGB, hemoglobin; HCT, hematocrit; GNRI, geriatric nutritional risk index, [1.489*albumin (g/L)]+[41.7*(body weight/idea body weight)]