

**THE EFFECTS OF VARYING COMBINATIONS OF SOYBEAN FLOUR AND  
ORANGE EXTRACT ON THE PHYSICAL CHARACTERISTICS,  
NUTRITIONAL CONTENT, ORGANOLEPTIC PROPERTIES, AND FOOD  
COST OF THE SOYTRUS ENTERAL FORMULA AS AN ALTERNATIVE HIGH-  
ENERGY HIGH-PROTEIN DIET FOR CANCER PATIENTS**

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**ABSTRACT**

**Background:** Cancer patients are at high risk of malnutrition and therefore require nutrient-dense and affordable enteral formulas.

**Objective:** This study aimed to determine the effects of varying combinations of soy flour and orange extract on the nutritional composition, organoleptic characteristics, physical properties (viscosity and osmolarity), and food cost of Soytrus enteral formulas as an alternative high-energy high-protein (HEHP) diet for cancer patients.

**Methods:** A quasi-experimental study with a Completely Randomized Design (CRD) was conducted using four formula variations (F1, F2, F3, and FERS). Nutrient content was calculated using Nutrisurvey. Organoleptic assessments were carried out by 20 semi-trained panelists consisting of Nutritionists and Dietitian students from Poltekkes Kemenkes Yogyakarta. Viscosity and osmolarity were measured using standard laboratory instruments.

**Results:** Soytrus showed a caloric density of 1.13–1.23 kcal/mL, flow rate of 3.25–4.80 mL/s, viscosity of 1.5–2.3 cP, and osmolarity of 320.6–491.6 mOsm/L, with all variants remaining within safe limits. Soytrus had a higher energy content (227.1–246.5 kcal/200 mL) compared to FERS (209.6 kcal), corresponding to a caloric density of 1.13–1.23 kcal/mL. The protein content of Soytrus (12.4–13.9 g) was also higher than that of FERS (6.8 g). Organoleptically, Soytrus F3 was the most preferred in terms of aroma, taste, and texture, while Soytrus F2 was the most preferred for color. Food cost analysis indicated that Soytrus F1 was the most economical formulation, whereas F2 and F3 had higher costs due to greater use of orange juice and milk.

**Conclusion:** Soytrus demonstrates favorable physical safety, nutritional value, sensory quality, and cost feasibility, making it a potential alternative enteral formula for cancer patients.

**Keywords:** Enteral Formula, Cancer, Orange Extract, Soybean Flour

**PENGARUH VARIASI CAMPURAN TEPUNG KACANG KEDELAI DAN SARI  
JERUK TERHADAP SIFAT FISIK, KANDUNGAN GIZI, SIFAT  
ORGANOLEPTIK, DAN *FOOD COST* PADA FORMULA ENTERAL SOYTRUS  
SEBAGAI ALTERNATIF DIET TINGGI ENERGI TINGGI PROTEIN (TETP)  
PADA PASIEN KANKER**

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**ABSTRAK**

**Latar Belakang:** Pasien kanker memiliki risiko tinggi malnutrisi sehingga membutuhkan formula enteral padat gizi dan terjangkau.

**Tujuan:** Penelitian ini bertujuan mengetahui pengaruh variasi campuran tepung kacang kedelai dan sari jeruk terhadap sifat fisik (densitas kalori, daya alir, viskositas dan osmolaritas), kandungan gizi, sifat organoleptik, dan *food cost* pada formula enteral Soytrus sebagai alternatif diet TETP pada pasien kanker.

**Metode:** Penelitian menggunakan desain quasi eksperimental dengan menggunakan Rancangan Acak Lengkap (RAL). Terdapat empat variasi formula (F1, F2, F3, FERS). Nilai gizi dihitung menggunakan *Nutrisurvey*, uji organoleptik dilakukan oleh panelis agak terlatih sebanyak 20 panelis yang terdiri dari Ahli Gizi dan Mahasiswa Pendidikan Profesi Dietisien Poltekkes Kemenkes Yogyakarta, sedangkan viskositas dan osmolaritas diukur menggunakan instrumen standar.

**Hasil:** Soytrus memiliki Densitas (1,13-1,23 kkal/ml), daya alir (3,25-4,80), viskositas (1,5–2,3 cP) dan osmolaritas (320,6–491,6 mOsm/L) seluruh varian berada dalam batas aman. Kandungan energi lebih tinggi (227,1–246,5 kkal/200 ml) dibanding FERS (209,6 kkal) dengan densitas 1,13–1,23 kkal/ml. Kandungan protein Soytrus (12,4–13,9 g) juga lebih tinggi dibanding FERS (6,8 g). Secara organoleptik, F3 paling disukai dari aspek aroma, rasa, dan tekstur, sedangkan F2 paling disukai dari warna. Food cost menunjukkan F1 paling ekonomis, sementara F2 dan F3 lebih tinggi akibat penggunaan jeruk dan susu.

**Kesimpulan:** Soytrus memiliki keamanan fisik, kandungan gizi, mutu sensoris, dan kelayakan biaya yang baik, sehingga berpotensi menjadi alternatif formula enteral untuk pasien kanker.

**Kata Kunci:** Formula Enteral, Kanker, Sari Jeruk, Tepung Kacang Kedelai