

**PENGEMBANGAN FORMULA ENTERAL  
TINGGI ENERGI TINGGI PROTEIN UNTUK PASIEN KANKER  
BERBASIS JAHE, IKAN BANDENG dan TEMPE SEBAGAI  
ALTERNATIF PENGGANTI FORMULA KOMERSIAL  
DI RSUD dr. TJITROWARDOJO PURWOREJO**

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**ABSTRAK**

**Latar Belakang.** Pasien kanker berisiko mengalami malnutrisi karena mengalami hipermetabolisme dan asupan oral tidak adekuat. Pengembangan formula enteral untuk pasien kanker berbasis Jahe, Ikan Bandeng, dan Tempe dipilih sebagai alternatif pengganti pemberian formula enteral komersial yang mahal. Mengandung protein serta isofalvon dan polifenol yang dapat mengatur nafsu makan dan menghambat penyebaran sel kanker.

**Tujuan.** Merancang nilai gizi, sifat fisik, viskositas, osmolaritas, sifat organoleptik, dan biaya produk formula enteral untuk pasien kanker.

**Metode.** Penelitian ini merupakan penelitian deskriptif komparatif dengan membandingkan hasil pengembangan formula enteral dan formula enteral komersial. Formula enteral yang dikembangkan dibuat dengan bahan jahe, ikan bandeng, tempe, wortel, tepung beras, susu skim, susu fullcream, gula kelapa, minyak kelapa sawit dan air. Nilai gizi diukur menggunakan label gizi pada produk dan Nutrisurvey, viskositas dan osmolaritas dihitung menggunakan uji alir sederhana, uji sifat organoleptik dilakukan oleh 20 orang panelis agak terlatih menggunakan formulir, serta biaya produk dihitung berdasarkan total biaya bahan baku dan biaya *overhead*.

**Hasil.** Nilai gizi Formula enteral JAEDEN dalam satu saji adalah energi sebesar 355,6 kkal, protein 20 gram (22,58%), lemak 8,6 gram (21,76%) dan karbohidrat 50,4 gram (56,69%) dan densitas kalori sebesar 1,06 kkal/ml. Formula enteral JAEDEN memiliki warna kekuningan, rasa khas jahe. Tekstur cair, dan aroma jahe. Formula enteral JAEDEN memiliki *foodcost* Rp. 5663,00 dan *unit cost* Rp. 7078,75.

**Kesimpulan.** Formula enteral JAEDEN memiliki nilai gizi, viskositas, osmolaritas, dan sifat organoleptik yang serupa dengan formula enteral komersil Nutrican dan sudah memenuhi syarat formula enteral tinggi energi tinggi protein.

**Kata Kunci :** Kanker, formula enteral, jahe, ikan bandeng, tempe dan wortel.

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**DEVELOPMENT OF A HIGH-ENERGY, HIGH-PROTEIN  
ENTERAL FORMULA FOR CANCER PATIENTS BASED ON GINGER,  
MILKFISH, AND TEMPEH AS AN ALTERNATIVE TO COMMERCIAL  
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**ABSTRACT**

**Background.** Cancer patients are at risk of malnutrition due to hypermetabolism and inadequate oral intake. The development of an enteral formula for cancer patients based on ginger, milkfish, and tempeh is chosen as an alternative to expensive commercial enteral formulas. These ingredients contain protein as well as isoflavones and polyphenols, which can help regulate appetite and inhibit the spread of cancer cells.

**Objective.** To design the nutritional value, physical properties, viscosity, osmolarity, organoleptic characteristics, and product cost of an enteral formula for cancer patients.

**Methods.** This research was a comparative descriptive study comparing the developed enteral formula with commercial enteral formulas. The developed enteral formula was made using ginger, milkfish, tempeh, carrots, rice flour, skim milk, full cream milk, coconut sugar, palm oil and water. Nutritional value was measured using product nutrition labels and Nutrisurvey. Viscosity and osmolarity were assessed using simple flow tests. Organoleptic properties were evaluated by 20 trained panelists using a questionnaire, and product cost was calculated based on the total cost of raw materials and overhead.

**Results.** The nutritional value of the JAEDEN enteral formula per serving was 355.6 kcal, with 20 grams of protein (22.58%), 8.6 grams of fat (21.76%), and 50.4 grams of carbohydrates (56.69%), with a caloric density of 1.06 kcal/ml. The JAEDEN formula had a yellowish color, a distinctive ginger taste, liquid texture, and a ginger aroma. The food cost of the JAEDEN formula was IDR 5,663.00, and the unit cost is IDR 7,078.75.

**Conclusion.** The JAEDEN enteral formula had nutritional value, viscosity, osmolarity, and organoleptic characteristics comparable to the commercial enteral formula Nutrican, and meets the requirements for a high-energy, high-protein enteral formula.

**Keywords:** Cancer, enteral formula, ginger, milkfish, tempeh, carrot

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