

**PENGEMBANGAN FORMULA ENTERAL DIABETES MELLITUS
BERBASIS TEPUNG OAT DAN TEPUNG KACANG MERAH DITINJAU
DARI UJI SIFAT FISIK DAN ANALISIS KANDUNGAN ENERGI,
PROTEIN, LEMAK, KARBOHIDRAT, DAN SERAT**

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ABSTRAK

Latar belakang : Diabetes Mellitus (DM) merupakan penyakit metabolik dengan prevalensi yang terus meningkat baik di dunia maupun di Indonesia. Salah satu strategi pengendalian DM adalah pengaturan pola makan dengan memilih bahan pangan yang memiliki indeks glikemik rendah dan kaya serat. Oat dan kacang merah merupakan bahan pangan yang memiliki indeks glikemik rendah serta mengandung serat dan protein yang berpotensi mendukung pengelolaan DM. Pada pasien DM dengan asupan oral yang tidak adekuat, kebutuhan gizi dapat dipenuhi melalui pemberian formula enteral. Namun, formula enteral komersial khusus DM masih relatif mahal sehingga diperlukan alternatif formula yang lebih terjangkau. Oleh karena itu, dikembangkan formula enteral berbasis tepung oat dan tepung kacang merah untuk dianalisis karakteristik fisik, kandungan gizi, dan *food cost*. **Tujuan :** Mengidentifikasi karakteristik formula enteral diabetes mellitus berbasis tepung oats dan tepung kacang merah berdasarkan sifat fisik, kandungan zat gizi, dan *food cost*. **Metode :** Penelitian ini merupakan penelitian eksperimental dengan desain deskriptif komparatif. **Hasil :** Formula enteral Diabetes Mellitus berbasis tepung oat dan tepung kacang merah memiliki karakteristik fisik berupa warna coklat muda, aroma khas, tekstur sedikit kental, dan rasa sedikit manis. Formula memiliki viskositas 13,85 cP dan osmolaritas 251,97 mOsm/L. Hasil uji proksimat per 1000 mL menunjukkan kandungan energi 797,1 kkal, protein 22,6 g, lemak 57,9 g, karbohidrat 45,5 g, dan serat 54,9 g. Formula ini lebih ekonomis dibandingkan formula enteral komersial dengan biaya produksi Rp4.908,00 per sajian (250 mL). **Kesimpulan :** Formula enteral Diabetes Mellitus berbasis tepung oat dan tepung kacang merah memiliki karakteristik fisik yang memenuhi persyaratan formula enteral, mengandung zat gizi yang berpotensi mendukung kebutuhan gizi penderita Diabetes Mellitus, serta memiliki *food cost* yang lebih ekonomis dibandingkan formula enteral komersial sehingga berpotensi menjadi alternatif formula enteral bagi penderita Diabetes Mellitus.

Kata Kunci: Diabetes mellitus, formula enteral, oat, kacang merah, viskositas.

DEVELOPMENT OF ENTERAL DIABETES MELLITUS FORMULA BASED ON OAT FLOUR AND RED BEAN FLOUR IN TERMS OF PHYSICAL PROPERTIES AND ANALYSIS OF ENERGY, PROTEIN, FAT, CARBOHYDRATE, AND FIBER CONTENT

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ABSTRACT

Background: Diabetes mellitus (DM) is a metabolic disease with a steadily increasing prevalence both globally and in Indonesia. One strategy for managing DM is dietary control through the selection of foods with a low glycemic index and high fiber content. Oats and red beans are foods that have a low glycemic index and contain fiber and protein, which have the potential to support DM management. In patients with diabetes mellitus (DM) who have inadequate oral intake, nutritional needs can be met through the administration of enteral formulas. However, commercial enteral formulas specifically designed for DM are still relatively expensive, making more affordable alternatives necessary. Therefore, an enteral formula based on oat flour and red bean flour was developed to analyze its physical characteristics, nutritional content, and food cost. **Objective:** To identify the characteristics of enteral formulas for diabetes mellitus based on oat flour and red bean flour in terms of physical properties, nutrient content, and food cost. **Methods:** This study was an experimental study with a descriptive-comparative design. **Results:** The enteral formula based on oat flour and red bean flour had light brown color, a distinctive oat and red bean aroma, a slightly thick texture, and a slightly sweet taste. The formula showed a viscosity of 13.85 cP and an osmolarity of 251.97 mOsm/L. Proximate analysis per 1,000 mL indicated that the formula contained 797.1 kcal of energy, 22.6 g of protein, 57.9 g of fat, 45.5 g of carbohydrates, and 54.9 g of dietary fiber. The formula was more economical than the commercial enteral formula, with a production cost of IDR 4,908.00 per serving (250 mL). **Conclusion:** The diabetes mellitus enteral formula based on oat flour and red bean flour demonstrated physical characteristics that met the requirements for enteral formulas, contained nutrients with the potential to support the nutritional needs of patients with diabetes mellitus, and had a lower food cost than commercial enteral formulas. Therefore, it has the potential to serve as an alternative enteral formula for patients with diabetes mellitus.

Keywords: Diabetes mellitus, enteral formula, oats, red beans, viscosity.