

**FORMULASI KRIM BERBAHAN AKTIF ASAM KOJAT DARI
FERMENTASI JAMUR *ASPERGILLUS ORYZAE* DENGAN
PENAMBAHAN SUMBER KARBON GLUKOSA**

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ABSTRAK

Masalah hiperpigmentasi kulit, seperti melasma, menjadi perhatian besar dalam industri kosmetik. Salah satu agen pencerah yang banyak digunakan adalah asam kojat, yang diketahui menghambat enzim tirosinase dalam proses melanogenesis. Penelitian ini bertujuan untuk memformulasikan krim pencerah wajah berbahan aktif asam kojat yang diperoleh melalui fermentasi jamur *Aspergillus oryzae* dengan penambahan sumber karbon glukosa. Metode yang digunakan adalah penelitian eksperimental, dimulai dari fermentasi untuk produksi asam kojat, proses ekstraksi cair-cair, analisis LC-MS untuk identifikasi senyawa aktif, hingga formulasi dan evaluasi stabilitas fisik krim. Evaluasi meliputi uji organoleptik, pH, viskositas, dan daya sebar. Hasil penelitian menunjukkan bahwa glukosa sebagai sumber karbon mampu meningkatkan produksi biomassa dan kadar asam kojat dari *A. oryzae*. Formula krim yang mengandung asam kojat 1,5% menunjukkan stabilitas fisik yang baik selama penyimpanan, dengan nilai pH berkisar 4,9–5,2, viskositas stabil, serta daya sebar yang sesuai standar kosmetik topikal. Kesimpulan dari penelitian ini adalah asam kojat hasil fermentasi dengan glukosa sebagai sumber karbon dapat diformulasikan ke dalam bentuk krim topikal yang stabil dan berpotensi sebagai agen pencerah kulit yang efektif serta ramah lingkungan.

Kata kunci: asam kojat, *Aspergillus oryzae*, glukosa, fermentasi.

**CREAM FORMULATION WITH ACTIVE INGREDIENTS OF KOJIC
ACID FROM FERMENTED ASPERGILLUS ORYZAE FUNGUS WITH
THE ADDITION OF GLUCOSE CARBON SOURCE**

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ABSTRACT

Skin hyperpigmentation has become a major concern in the cosmetics industry. It is a common skin condition caused by excessive melanin production. One of the most commonly used skin-lightening agents is kojic acid, known for its ability to inhibit melanogenesis. This study aims to formulate a facial brightening cream using kojic acid derived from the fermentation of *Aspergillus oryzae* with the addition of glucose as a carbon source. The research employed an experimental method, starting from kojic acid production through fermentation, liquid-liquid extraction, and LC-MS analysis for active compound identification, to the formulation and evaluation of the cream's physical stability. Evaluations included organoleptic tests, pH, viscosity, and spreadability. The results showed that glucose as a carbon source enhanced both biomass production and kojic acid concentration from *A. oryzae*. The cream formulation containing 1.5% kojic acid exhibited good physical stability during storage, with pH values ranging from 4.9 to 5.2, stable viscosity, and spreadability that met topical cosmetic standards. In conclusion, kojic acid obtained through fermentation with glucose as a carbon source can be formulated into a stable topical cream and holds potential as an effective and environmentally friendly skin-lightening agent.

Keywords: kojic acid, *Aspergillus oryzae*, glucose, fermentation