

**PENDUGAAN UMUR SIMPAN PRODUK *BROWNIES CRISPY* BEBAS
GLUTEN MENGGUNAKAN PENDEKATAN ISOTERM SORPSI
LEMBAP DI PT SARASWANTI INDO GENETECH**

INTISARI

Oleh:

Leoni Liesetiasari

21/477738/TP/13160

Produk *brownies crispy* bebas gluten yang akan diedarkan diwajibkan untuk menyertakan keterangan kedaluwarsa pada kemasannya, yaitu ‘baik digunakan sebelum’ atau ‘*best before*’ sebagaimana telah diatur baik secara internasional dalam CODEX STAN 1-1985, serta di tingkat nasional dalam UU RI Nomor 7 Tahun 1996 tentang Pangan dan PP Nomor 69 Tahun 1999 tentang Label dan Iklan Pangan. Penelitian ini bertujuan untuk mengetahui dugaan umur simpan produk *brownies crispy* bebas gluten menggunakan metode Accelerated Shelf Life Testing (ASLT) berdasarkan pendekatan isoterm sorpsi lembap. Produk *brownies crispy* bebas gluten dikemas dalam *standing pouch aluminum foil* pada lingkungan penyimpanan dengan rentang kelembaban relatif (RH) 13%, 36%, 69%, 70%, 83%, dan 90%. Hasil penelitian menunjukkan bahwa kadar air awal (Mo) sampel sebesar 0,0192 g H₂O/g padatan, kadar air kritis (Mc) sampel sebesar 0,0443 g H₂O/g padatan, kadar air kesetimbangan (Me) sampel sebesar 0,2916 g H₂O/g padatan dan 0,3233 g H₂O/g padatan pada kelembapan relatif (RH) 70% dan 75%, nilai kemiringan kurva (*slope b*) sebesar 0,6275, serta nilai permeabilitas uap air kemasan (*k/x*) sebesar 0,0072 g/m².hari.mmHg. Umur simpan produk *brownies crispy* bebas gluten yang disimpan pada suhu 30°C menggunakan kemasan *standing pouch aluminium foil* pada kondisi lingkungan dengan kelembapan relatif (RH) 70% dan 75% adalah 333 hari atau 11,10 bulan dan 297 hari atau 9,89 bulan.

Kata kunci: *brownies crispy*, umur simpan, isoterm sorpsi lembap, kadar air kritis

**ESTIMATION OF SHELF LIFE FOR GLUTEN-FREE CRISPY
BROWNIES PRODUCT USING MOISTURE SORPTION ISOTHERM
APPROACH AT PT SARASWANTI INDO GENETECH**

ABSTRACT

By:

Leoni Liesetiasari

21/477738/TP/13160

Gluten-free crispy brownies that are distributed are required to display an expiration date on the packaging, as regulated internationally by CODEX STAN 1-1985 and nationally by Food Law No. 7/1996 and Government Regulation No. 69/1999 concerning food labels and advertisements. This study aims to determine the estimated shelf life of gluten-free crispy brownies using Accelerated Shelf Life Testing (ASLT) based on the moisture sorption isotherm approach. The gluten-free crispy brownies are packaged in aluminum foil standing pouches and stored under different relative humidity (RH) conditions: 32%, 43%, 75%, 85%, and 95%. The research results showed that the initial water content (M_0) was 0.0192 g H_2O /g solid, critical water content (M_c) was 0.0443 g H_2O /g solid, and equilibrium water content (M_e) was 0.2916 g H_2O /g solid and 0.3233 g H_2O /g solid at 70% and 75% RH, respectively. The curve slope (slope b) was 0.6275, and the water vapor permeability in packaging (k/x) was 0.0072 g/m²·day·mmHg. The shelf life of gluten-free crispy brownies packaged in aluminum foil standing pouches and stored at 30 °C was 333 days (11.10 months) at 70 % RH and 297 days (9.89 months) at 75 % RH.

Keywords: *crispy brownies, shelf life, moisture sorption isotherm, critical moisture content*