

## **KARAKTERISTIK FISIKOKIMIA MINYAK BIJI MATOA (*Pometia pinnata* Forst.) VARIETAS PAPEDA**

### **INTISARI**

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Matoa papeda merupakan buah tropis yang banyak dijumpai di wilayah timur Indonesia. Biji matoa papeda mengandung minyak dengan kadar  $22,43 \pm 1,35\%$ . Jumlah tersebut dapat dioptimalkan sebagai sumber minyak nabati pengganti minyak sawit yang saat ini mulai langka. Penelitian ini dilakukan untuk mengetahui sifat morfologi buah matoa varietas papeda; karakteristik geometris dan fisik biji matoa varietas papeda; serta karakteristik kimia, fisik, dan termal minyak biji matoa varietas papeda. Hasil penelitian menunjukkan bahwa buah matoa papeda memiliki sifat morfologi yaitu urutan rasio bagian buah dari yang terbesar ke terkecil meliputi kulit buah (33,93%), daging buah (33,44%), dan biji buah (32,63%). Biji matoa varietas papeda memiliki karakteristik geometris seperti *equator diameter* (18,03 mm); *polar diameter* (23,94 mm); *thickness* (23,94 mm); *shape index* (0,12); *sphericity* (98,35%); *frontal surface area* (339,52 mm<sup>2</sup>); *cross-sectional area* (263,32 mm<sup>2</sup>) dan karakteristik fisik seperti massa (3,15 g); volume (2,85 ml); *true density* (1,10 g/ml); *bulk density* (0,45 g/ml); porositas (59,52%). Minyak biji matoa varietas papeda yang diekstrak dengan metode maserasi menggunakan pelarut n-heksana memiliki karakteristik kimia seperti angka iod (46,09 g iod/100 g minyak); *saponification value* (144,41 mg KOH/g); *unsaponifiable matter* (3,52%); angka asam (1,68 mg KOH/g); angka peroksida (1,41 mEq/kg); angka p-anisidine (0,78 mEq/kg); dan angka totox (3,60 mEq/kg); karakteristik fisik seperti massa jenis (0,82 g/ml); viskositas (37,17 cP); warna ( $L^*=31,36$ ;  $a^*=-2,51$ ;  $b^*=11,68$ ), dan indeks refraksi (1,46); serta karakteristik termal seperti titik leleh (26°C); titik asap (149,50°C); dan profil termal DSC dengan profil pelelehan (13,29-26,57°C) dan profil kristalisasi (2,40 hingga -1,78°C). Minyak biji matoa papeda berpotensi untuk dijadikan *edible oil* menyerupai RSF dengan melalui proses preparasi, *refining*, dan penyimpanan yang lebih baik.

**Kata kunci:** matoa papeda, minyak pangan, karakteristik kimia, karakteristik fisik, karakteristik termal

## PHYSICOCHEMICAL CHARACTERISTICS OF PAPEDA VARIETY MATOA (*Pometia pinnata* Forst.) SEED OIL

### ABSTRACT

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Matoa is a tropical fruit that is often found in eastern Indonesia. Matoa papeda seeds contain oil with levels of  $22,43 \pm 1,35\%$ . This amount can be optimized as a source of vegetable oil to replace palm oil which is currently getting scarce. This research was conducted to determine the composition of the papeda variety matoa fruit; geometric and physical characteristics of papeda variety matoa seeds; and the chemical, physical, and thermal characteristics of papeda variety matoa seed oil. The results showed that the matoa papeda fruit had morphological characteristics, namely the order of the ratio of the parts of the fruit from the largest to the smallest including the skin of the fruit (33,93%), the flesh of the fruit (33,44%), and the seeds of the fruit (32,63%). Papeda variety matoa seeds have geometric characteristics such as equator diameter (18,03 mm); polar diameter (23,94 mm); thickness (23,94 mm); shape index (0,12); sphericity (98,35%); frontal surface area (339,52 mm<sup>2</sup>); cross-sectional area (263,32 mm<sup>2</sup>) and physical characteristics such as mass (3,15 g); volume (2,85 ml); true density (1,10 g/ml); bulk density (0,45 g/ml); porosity (59,52%). Papeda variety matoa seed oil extracted by maceration method using n-hexane solvent has chemical characteristics such as iodine number (46,09 g iodine/100 g oil); saponification value (144,41 mg KOH/g); unsaponifiable matter (3,52%); acid number (1,68 mg KOH/g); peroxide value (1,41 mEq/kg); p-anisidine rate (0,78 mEq/kg); and totox figures (3,60 mEq/kg); physical characteristics such as density (0,82 g/ml); viscosity (37,17 cP); color ( $L^*=31,36$ ;  $a^*=-2,51$ ;  $b^*=11,68$ ), and refractive index (1,46); as well as thermal characteristics such as melting point (26°C); smoke point (149,50°C); and DSC thermal profile with melting profile (13,29-26,57°C) and crystallization profile (2,40 to -1,78°C). Matoa papeda seed oil has the potential to be used as an edible oil similar to RSF through better preparation, refining, and storage processes.

**Keywords:** matoa papeda, edible oil, chemical characteristic, physical characteristic, thermal characteristic