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PHYSICOCHEMICAL CHARACTERISTICS AND SENSORY ACCEPTANCE OF  
WATERMELON (*Citrullus vulgaris Schrad*) RIND CORDIAL

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RESEARCH PROJECT submitted in partial fulfillment of the requirement for the  
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**DECLARATION**

I hereby declare that this research project is based on my original work except for quotations and summaries which have been duly acknowledged.

15<sup>th</sup> June 2006



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Approved by,



PUAN FARIDAH YAHYA

(Supervisor)

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## ABSTRACT

This study was conducted to evaluate the physicochemical characteristics of watermelon rind and watermelon rind cordial. Watermelon rind cordial were prepared with watermelon rind juice, sugar and citric acid. Six samples were prepared from two types of different flesh color watermelon (red and yellow) rind cordial in order to analysis physicochemical characteristic. Sensory evaluation was conducted by 50 panels (untrained panel) from KUSTEM. The acceptance test was done by using an affective test. All the results, One-way analysis of variance (ANOVA) and Duncan's Multiple Range Test (DMRT) from the data of the test will be analysis with the computer by using the System Analysis Statistic program (SAS). Red flesh watermelon rind was lower ascorbic acid amounts ( $41.40 \pm 0.66$ ) mg and protein ( $16.40 \pm 4.28$ ) % but higher pH ( $5.44 \pm 0.14$ ), thickness ( $14.88 \pm 0.03$ ) mm, hardness ( $21.00 \pm 1.42$ ) kg and fiber ( $25.05 \pm 2.55$ ) % than yellow flesh watermelon rind. All the analysis results of red flesh watermelon rind were no significant differences with yellow flesh watermelon rind except hardness and thickness. For the physicochemical characteristics of watermelon rind cordial, sample A (red flesh watermelon rind cordial to water ratio was 1:4) showed the highest pH ( $3.00 \pm 0.53$ ), stickiness ( $4.43 \pm 0.53$ ) g and ascorbic acid ( $28.53 \pm 1.19$ ) mg. Sample D (yellow flesh watermelon rind cordial to water ratio was 1:4) indicated the highest stringiness ( $7.59 \pm 0.55$ ) mm and colour for "L" values ( $89.80 \pm 14.85$ ), "a" values ( $1.37 \pm 0.44$ ) and "b" values ( $4.86 \pm 0.85$ ). Samples A (red flesh watermelon rind cordial to water ratio was 1:4) and D (yellow flesh watermelon rind cordial to water ratio was 1:4) were same values of viscosity  $0.07 \text{ mPas}^{-1}$ . Samples A (red flesh watermelon rind cordial to water ratio was 1:4), B (red flesh watermelon rind cordial to water ratio was 1:6), C (red flesh watermelon rind cordial to water ratio was 1:9), D (yellow flesh watermelon rind cordial to water ratio was 1:4), E (yellow flesh watermelon rind cordial to water ratio was 1:6) and F (yellow flesh watermelon rind cordial to water ratio was 1:9) were same percentages of protein 0.09 %. All the compositions of samples cordial were influenced by the dilution ratio because increase of moisture content. Sensory evaluation were resulted that sample A (red flesh watermelon rind cordial to water ratio was 1:4) showed the most likely accept to become cordial. That was because panelists more favorite to the attributes of red flesh watermelon rind cordial to water ratio was 1:4. All the samples were significant differences ( $p < 0.05$ ) in overall acceptance. Though this study indicated that watermelon rind (underutilized agricultural waste) was potential to be a product in the market.

## CIRI-CIRI FIZIKOKIMIA DAN PENERIMAAN SENSORI BERASASKAN KORDIAL KULIT TEMBIKAI (*Citrullus vulgaris* Schrad)

### ABSTRAK

Kajian ini dilaksanakan untuk menilai kulit dan kordial kulit tembikai dari segi ciri-ciri fizikokimia. Kordial kulit tembikai disediakan dengan menggunakan jus kulit tembikai, gula dan asid sitrik. Enam sampel disediakan daripada dua jenis kulit tembikai yang berlainan warna isi (kuning dan merah) untuk menjalankan analisis fizikokimia. Penilaian sensori dijalankan oleh 50 orang panel (panel bukan terlatih) dari KUSTEM. Ujian penilain sensori dijalankan dengan menggunakan ujian afektif. Kesemua data keputusan, Perubahan Analisis Satu-hala (ANOVA) dan Ujian Penggandaan Lingkungan Duncan's (DMRT) akan dianalisis dengan menggunakan persisian komputer Program Sistem Analisis Statistik (SAS). Kulit tembikai berisi merah mengandungi kandungan asid askorbik ( $41.40 \pm 0.66$ ) mg dan protein ( $16.40 \pm 4.28$ ) % yang rendah tetapi mengandungi pH ( $5.44 \pm 0.14$ ), ketebalan ( $14.88 \pm 0.03$ ) mm, kekerasan ( $21.00 \pm 1.42$ ) kg dan fiber ( $25.05 \pm 2.55$ ) % yang tinggi jika dibanding dengan kulit tembikai berisi kuning. Kesemua keputusan bagi kulit tembikai berisi merah tiada perbezaan signifikan dengan kulit tembikai berisi kuning kecuali kekerasan dan ketebalan. Bagi ciri-ciri fizikokimia kordial kulit tembikai, sampel A (pencairan kordial kulit tembikai berisi merah dengan air dalam nisbah 1:4) menunjukkan paling tinggi dalam pH ( $3.00 \pm 0.53$ ), kekekatan ( $4.43 \pm 0.53$ ) g dan asid askorbik ( $28.53 \pm 1.19$ ) mg. Sampel D (pencairan kordial kulit tembikai berisi kuning dengan air dalam nisbah 1:4) adalah paling tinggi dalam kekuatan ikatan ( $7.59 \pm 0.55$ ) mm dan warna bagi nilai "L" ( $89.80 \pm 14.85$ ), nilai "a" ( $1.37 \pm 0.44$ ) dan nilai "b" ( $4.86 \pm 0.85$ ). Sampel A dan D adalah sama kelikatan iaitu  $0.07 \text{ mPas}^{-1}$ . Sampel A (pencairan kordial kulit tembikai berisi merah dengan air dalam nisbah 1:4), B (pencairan kordial kulit tembikai berisi merah dengan air dalam nisbah 1:6), C (pencairan kordial kulit tembikai berisi merah dengan air dalam nisbah 1:9), D (pencairan kordial kulit tembikai berisi kuning dengan air dalam nisbah 1:4), E (pencairan kordial kulit tembikai berisi kuning dengan air dalam nisbah 1:6) dan F (pencairan kordial kulit tembikai berisi kuning dengan air dalam nisbah 1:9) adalah sama peratusan protein iaitu 0.09 %. Kesemua kandungan kordial kulit tembikai adalah terpengaruhi oleh pencairan atas sebab penambahan kandungan air dalam sampel. Sampel A (pencairan kordial kulit tembikai berisi merah dengan air dalam nisbah 1:4) adalah paling diterima sebagai kordial dalam ujian penilaian sensori. Hal ini berlaku kerana penerimaan atribut-atribut kordial kulit tembikai berisi merah yang dicairkan dengan air dalam nisbah 1:4 adalah memenuhi cita rasa bagi kebanyakan panel. Kesemua sampel tiada perbezaan signifikan ( $p < 0.05$ ) dalam penerimaan keseluruhan. Kulit tembikai adalah mempunyai potensi untuk dijadikan produk dalam pasaran melalui kajian ini.