Peran Asupan dan Plasma Carboxymethyl Lysine dan Parameter Inflamasi Sebagai Mediator Obesitas Pada Suku Minangkabau dan Sunda = The Role of Dietary and Plasma Carboxymethyl Lysine and Inflammatory Parameter as Mediators of Obesity Among Minangkabau and Sundanese Women

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Abstrak

Carborxymethyl lysine dalam makanan (dCML), CML plasma (pCML), dan tumor necrosis alpha plasma (pTNF-Î±) mungkin dapat memengaruhi obesitas. Namun database kandungan CML makanan di Indonesia dan penelitian tentang pengaruh asupan CML terhadap obesitas pada wanita Asia belum pernah dilaporkan sebelumnya. Penelitian ini bertujuan untuk mendapatkan database CML makanan Indonesia dan menilai efek mediator dCML, pCML, dan pTNF-Î± terhadap lingkar pinggang (WC), rasio lingkar pinggang terhadap tinggi badan (WHtR), dan indeks masa tubuh (IMT). Penelitian potong lintang dilakukan terhadap 235 wanita sehat berusia 19-50 tahun, yang bertempat tinggal di daerah pesisir pantai dan pegunungan di Sumatra Barat dan Jawa Barat. Database CML dibuat berdasarkan estimasi dari database CML yang telah dipublikasi dan pemeriksaan secara langsung pada makanan yang diambil dari kedua provinsi tersebut, dengan menggunakan metode liquid chromatography-tandem mass spectrometry. Asupan CML, pCML, dan pTNF-Î± didapatkan berturut-turut dari 2x24 jam recalls, ultra-performance liquid chromatography-tandem mass spectrometry, and enzyme-linked immunosorbent assay. Perbedaan di antara kelompok dianalisis dengan menggunakan Chi-square atau t-test tidak berpasangan, efek mediator dianalisis dengan structural equation modelling, dan untuk perilaku makan dilakukan dengan wawancara mendalam dan observasi. Terdapat 161 dari 252 jenis makanan dalam database CML yang telah diidentifikasi kandungan CMLnya secara langsung. Kelompok daging dan kacang-kacangan memiliki nilai rerata kandungan CML tertinggi pertama dan kedua. Geometric means ± SD dari dCML, pCML, dan pTNF-Î± berturut-turut sebesar 1.7±0.8 mgCML/hari, 22.3±7.9 ng/mL, dan 0.68 ± 0.38 IU/mL. Asupan CML berhubungan langsung dan positif terhadap pCML (Î²= 0.99 [95%CI: 0.53, 1.78]) demikian pula pCML terhadap pTNF-Î± (Î²= 0.12 [95%CI: 0.28, 0.49]). Plasma CML dan pTNF-Î± berhubungan secara langsung dan positif terhadap WC (Î²= 0.21 [95%CI: 0.08, 0.33] dengan Î²= 0.23 [95%CI: 0.11, 0.35]) dan juga terhadap WHtR (Î²= 0.18 [95%CI: 0.06, 0.31] dengan Î²= 0.23 [95%CI: 0.11, 0.35]). Pada wawancara mendalam didapatkan bahwa kelompok suku Sunda lebih banyak mengosumsi makanan yang diproses seperti ikan peda goreng, ikan asin goreng dan bakso dibandingkan kelompok suku Minangkabau. Simpulan: Asupan CML, pCML, dan pTNF-Î± tampaknya lebih berperan sebagai mediator terhadap WC dan WHtR, dibandingkan terhadap BMI. Pembatasan asupan CML diperlukan untuk menurunkan risiko obesitas sentral pada populasi ini. <hr /> Carborxymethyl lysine in foods (dCML), plasma CML (pCML), and plasma tumor necrosis alpha (pTNF-Î±) may have an influence on obesity. However, there have been no reports on databases of CML content in Indonesian foods and on studies of the influence of CML intake on obesity in Asian women. This study aims to develop a database of CML content in Minangkabau and

Sundanese foods and to evaluate the mediator effects of dCML, pCML, and pTNF-Î± on waist circumference (WC), waist to height ratio (WHtR), and body mass index (BMI). A cross-sectional study was conducted in 235 healthy women aged 19-50 years, who resided in coastal and mountainous areas of West Sumatra and West Java. The CML database was developed based on an estimate from published database and direct measurement of foods obtained from these two provinces, using liquid chromatography-tandem mass spectrometry. The dCML, pCML, and pTNF-Î± concentrations were obtained from 2x24 hour recalls, ultra-performance liquid chromatography-tandem mass spectrometry, and enzyme-linked immunosorbent assay, respectively. Between-group differences were analyzed by chi-square test or unpaired t-test, the mediator effects by structural equation modelling, and eating behavior by in-depth interviews and observations. There were 161 of 252 food items of which the CML content was determined. The group of meats and the group of legumes had the highest and second highest mean CML content, respectively. The Geometric means ± SD of dCML, pCML, and pTNF-Î± were 1.7±0.8 mgCML/day, 22.3±7.9 ng/mL, and 0.68 ± 0.38 IU/mL, respectively. There was a direct positive association between dCML and pCML (Î²= 0.99 [95%CI: 0.53, 1.78]) and between pCML and pTNF-Î± (Î²= 0.12 [95%CI: 0.28, 0.49]). Plasma CML and pTNF-Î± were directly and positively associated with WC (Î²= 0.21 [95%CI: 0.08, 0.33] and Î²= 0.23 [95%CI: 0.11, 0.35]) and WHtR (Î²= 0.18 [95%CI: 0.06, 0.31] and Î²= 0.23 [95%CI: 0.11, 0.35]). In eating behavior, it was seen that the Sundanese women consumed more CML from processed foods such as fried fermented fish (ikan peda goreng), fried salted fish (ikan asin goreng) and meatballs (bakso) than Minangkabau women. Conclusion: Dietary CML, pCML, and pTNF-Î± apparently had a greater role as mediators in the path from ethnicity to WC and WHtR, than in the path from ethnicity to BMI. Limitation of CML intake is necessary to reduce the risk of central obesity in this population