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Determination of nonstick property of asam gelugor (Garcinia atroviridis) / Wong Yen Chuin.

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DETERMINATION OF NONSTICK PROPERTY OF *ASAM GELUGOR* (*Garcinia atroviridis*)

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DECLARATION

I hereby declare that this research project is based on my original work except the quotation and summaries which have been duly acknowledge.

28th June 2007

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28th June 2007

Approved by,

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(Supervisor)

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ABSTRACT

In the Malay traditional cooking method that *asam gelugor* (*Garcinia atroviridis*) can used as nonstick reagent for the cookware. For this study, high performance liquid chromatography (HPLC) method was used for determining the concentration of organic acids (ascorbic acid, citric acid, malic acid and tartaric acid). Besides, the nonstick property test used to determine the best mixture acids of *Garcinia atroviridis*. In addition, a scale for nonstick property test used to determine the level of stickiness of egg white. This study was divided into 3 parts. First part was tested the single acid and prepared as 10%, 50% and 100%, the second part was tested 2 acids mixture and third part was tested 3 acids mixture. For the second part, 2 types of acids were mixed up to be 10%, 50% and 100% and each percentage was contain 3 different ratios ({1:9}, {5:5} and {9:1}). Besides, for the third part was prepared like second part but each percentage was contained 3 different ratios ({1:1:8}, {1:8:1} and {8:1:1}). The high concentration (100%) of citric acid, malic acid and tartaric acid showed slight potential for anti-adherence, for example the mean of those acid mixtures were 2.67 which stayed between the range of scale "2"(½ stick) to scale "3" (full stick). In addition, for all acid mixtures which contain ascorbic acid showed scale "3". Furthermore, citric acid (2.6×10^{7} µg/100g) was the highest concentration in *G. atroviridis* and the second highest was malic acid which was 4.6×10^{6} µg/100g. In contrast, ascorbic acid and tartaric acid have very low concentration in *G. atroviridis* which were 1.6×10^{5} µg/100g and 2.7×10^{-3} µg/100g. Eventhough, the high concentration of tartaric acid performed that slight potential for nonstick effect, but its concentration in *G. atroviridis* was very low and then it cannot performed nonstick characteristic. As the conclusion, those four types organic acid were not the nonstick property of *G. atroviridis*.

PENENTUAN "NONSTICK PROPERTY' BAGI *ASAM GELUGOR* (*Garcinia atroviridis*)

ABSTRAK

Asam gelugor biasanya digunakan sebagai reagen "*nonstick*" bagi alatan masakan dalam cara pemasakan tradisional Melayu. Dalam kajian ini, HPLC telah digunakan untuk menentukan kepekatan asid organik (asid askorbik, asid sitrik, asid malik dan asid tartarik). Selain itu, ujian "*nonstick property* "digunakan untuk menentukan campuran asid yang terbaik dalam *G.atroviridis*. Tambahan pula, tahap kelekatan dapat ditentukan dengan skala "*nonstick property*". Seterusnya, ujian tersebut dibahagikan kepada 3 bahagian. Bahagian pertama untuk menguji keefektifan kelekatan bagi asid tunggal dan tiga peratusan yang berlainan iaitu 10%, 50% dan 100% disediakan, manakala bahagian kedua adalah menguji campuran dua asid dan bahagian ketiga adalah menguji campuran tiga asid. Dalam bahagian kedua, percampuran dua jenis asid dicampurkan kepada 10%, 50% dan 100%. Setiap peratusan mengandungi tiga nisbah yang berlainan iaitu ({1:9}, {5:5} dan {9:1}). Selain itu, cara percampuran asid bagi bahagian ketiga adalah seperti bahagian kedua, tetapi setiap peratusan mengandungi tiga nisbah yang berlainan iaitu ({1:1:8}, {1:8:1}dan {8:1:1}). Asid sitrik, asid malik dan asid tartarik yang berkepekatan tinggi menunjukkan sedikit potensi untuk anti melekat. Contohnya, min bagi campuran tiga asid tersebut adalah 2.67 dan iaitu dalam lingkungan skala "2" (½ lekat) dan skala "3" (lekat penuh). Selain itu, tahap kelekatan bagi semua campuran asid yang mengandungi asid askorbik adalah skala "3". Tambahan pula, kepekatan asid sitrik adalah tertinggi dalam *G.atroviridis* dan kepekatannya adalah 2.6×10^{7} µg/100g seterusnya adalah asid malik dan kepekatan adalah 4.6×10^{6} µg/100g. Sebaliknya, kepekatan asid askorbik dan asid tartarik adalah terendah dalam *G. atroviridis* dan kepekatanbagi kedua-dua asid adalah 1.6×10^{5} µg/100g dan 2.7×10^{-3} µg/100g. Walaupun asid tartarik yang berkepekatan tinggi menunjukkan sedikit potensi dalam anti melekat, tetapi kepekatan asid tartarik dalam *G. atroviridis* adalah sangat rendah dan tidak bersifat anti melekat. Secara kesimpulan, keempat-empat asid yang diujikan adalah bukan "nonstick property" bagi *G.atroviridis*.