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Technical Sessions : A - 15

Decarboxylation of Waste Coconut Oil for the Production of Green Diesel

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Green diesel has emerged as an environmentally and economically friendly solution to the energy crisis. Green diesel can be produced either by hydrogenation or decarboxylation/decarbonylation. This project is involved in producing hydrocarbons from waste coconut oil by decarboxylation. Waste coconut oil was filtered with anhydrous Sodium Sulphate and heated. The waste coconut oil was hydrolyzed using ethanolic KOH to yield free fatty acids. Hydrolysis was carried out at 60 °C for 2 hours. After alkaline hydrolysis, the mixture was acidified using glacial acetic acid. To determine whether hydrolysis has taken place acid values of oil before and after hydrolysis were compared. The decarboxylation process was carried out by a special apparatus designed by the authors. Decarboxylation process was carried out at 200 °C and the fractions of product were collected in the collecting vessel. The mixture was then distilled and two fractions were collected at 60-80 °C and 80-110°C. Distilled fractions and the remaining residue were extracted into petroleum ether, water layer separated and analyzed by GC-MS at the University of Colombo. The distillation fraction at 60 °C- 80 °C showed the presence of hydrocarbons. These hydrocarbons are nonane, decane, undecane, dodecane, tridecane and are in the petro diesel range. This process can be improved by applying high pressure and temperature. Work is being carried out using a high pressure reactor and Pd/C as a catalyst.

Technical Sessions : A - 16

Anti-diabetic compounds in *Syzygium cumini* ready to serve herbal drink

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Herbal beverages with desirable sensory attributes are an ideal way to offer consumers with phytochemicals having speoific health promoting functionalities. *Syzygium cumini* bark decoction is used in treating diabetes mellitus in Ayurvedha medicine[1]. Based on the findings of earlier research work of the authors in relation to antidiabetic properties of *S. cumini* decoction, such as antiglycation and antioxidant activities and high total phenolic content, a ready to serve (RTS) herbal drink was developed. This work describes the chemistry of the *S. cumini* decoction and the RTS herbal drink developed. The decoction was prepared according to the traditional method used to prepare decoctions in Ayurvedha medicine using commercial samples.

Activity guided fractionation of the decoction of the *S. cumini* was carried out by sequential extraction of organic solvents with different polarities. Ethyl acetate and aqueous fractions were analyzed using different chromatographic methods to determine the active compounds. Phenolic compounds of the ethyl acetate extract of the decoction were determined using Thin Layer Chromatography (TLC) method and by comparing R_f values with authentic compounds. High Performance Liquid Chromatography (HPLC) analysis was performed for the identification and confirmation of the compounds in the decoction and the RTS herbal drink.

Gallic acid (R_f = 1.7min.) and ellagic acid (R_f = 3.65.min) were separated by HPLC, on a C18 column using 1% acetic acid and acetonitrile (80:20 v/v). An UV-VIS library of pure compounds were created using Millennium chromatographic manager package by injecting the pure compounds to the HPLC under the above chromatographic conditions. The LC UV-VIS spectra of the two compounds were identical with the corresponding spectra of the library. Gallic acid and umbelliferone were determined as the active compounds in the decoction by TLC method and were confirmed by applying the co-chromatography with authentic compounds. Gallic acid and ellagic acid were determined through the HPLC analysis as the active ingredients in the decoction and in the RTS herbal drink and the presence of these compounds were confirmed