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GC-MS analysis of active constituents of the herbal mixture used by diabetics in Phillipines and the Middle East

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In search for new therapies, traditional medicines of plant origin are investigated using modern scientific techniques. One of such products is produced under the name Natural Diabetea. It is a mixture of powders of several medicinal plants. It is prescribed as a drink for diabetes and other diseases in some Asian countries. The active constituents of this mixture of medicinal plants were investigated by Gas Chromatography-Mass Spectrometry (GC-MS) for identification and quantification of active natural compounds present for possible elucidation of the therapeutic action. GC-MS analysis of the methanol extract of the tea product indicated the major biologically active constituents, i.e. caffeine, β -sitosterol, β -amyirin, lupeol, linoleic acid and vitamin E. The identification of the substances was performed based on retention times and molecular ion masses by matching the MS spectra of GC chromatographic peaks with spectra of reference compounds in the NIST library. Furthermore, GC/MS analyses of available individual herbal constituents of this tea mixture, e.g., Nuga (*Ficus bengalensis*) and Attikka (*Ficus racemosa*) extracts were also conducted for comparison. The analysis indicated the presence of lupeol and β -amyirin in Nuga extract and β -sitosterol in Attikka extract. Quantification of the major active constituents, β -sitosterol, β -amyirin and lupeol, was based on measurement of the peak areas of these components in herbal extracts of tea product in comparison to β -sitosterol, β -amyirin and lupeol reference solutions of known concentrations. Using the above formula, approximate concentrations of lupeol, β -amyirin and β -sitosterol at 10 mg, 3.0 mg and 7.0 mg per 1 gm of the tea mixture were calculated.

Conclusion: The beneficial properties of Natural Diabetea are likely, at least partially, due to the presence of phytosterols, namely β -amyirin, lupeol and β -sitosterol. Several of these substances were detected, confirmed and quantified using GC/MS analysis.

Biography

Novotny L was born on October 5, 1955 in Svitavy, Czechoslovakia. He had obtained his Bachelor's Degree in Pharmaceutical Science from Kharkov Pharmaceutical Institute, Ukraine in 1980; Doctor of Pharmaceutical degree from Charles University in 1981; Doctor of Philosophy degree from Czechoslovak Academy of Sciences in Prague in 1984; Doctor of Science degree from Slovak Academy of Sciences, Bratislava in 1997. He is working as a Professor of Pharmaceutical Chemistry in Kuwait University, since 1998. He is the acting dean of Faculty Pharmacy, since 2003. He is the member of Kuwait Pharmaceutical Association, European Association Cancer Research, American Association Cancer Research, Slovak Pharmacol. Society, Slovak Pharmaceutical Society. He contributed more than 140 articles to reputed Science journals.

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