Hoodia gordonii, Family Aizoaceae, is a slow-growing succulent plant and is traditionally used in South Africa for its appetite suppressing activity. The plant and is traditionally used in South Africa for its appetite suppressing activity. The limited availability of this plant material and its increasing popularity leads to the possibility of adulterations by other species or even genera. One possible adulterant may be Opuntia species (app.), which grows widely. There has been no appetite suppressing activity associated with these species. Consequently analytical methods have been developed based on the acquired knowledge on the plant composition in order to detect adulterations. Previous results of screenings give rise to serious concerns about the quality and market of this commercial products claimed to be Hoodia, as a considerable amount of plant material was purchased from South Africa. It is used as the benchmark authentic sample throughout this investigation.

Sample preparation

For each sample, five (5) capsules were weighed, opened and contents were emptied. The content of capsules was mixed and triturated in a mortar and pestle. The triturate was then transferred to a 50-ml vial and used it as the QC run. For each individual sample, six replicates of injection were performed and the respective supernatants were combined. The final volume was adjusted to 10 ml with methanol and mixed. The solution was passed through a 0.45 µm nylon membrane filter. The first 1.0 ml was retained as the QC run. For samples that were purchased from Chinese suppliers the priority was to obtain optimum separation resolution with sufficient peak capacity. The first 0.5 ml injection was performed without any sample retention time was used for analytical runs.

Column: ACQUITY UPLC HSS T3 Column 2.1 x 100 mm, 1.8 µm, 60 Å.

Acquisition Range: 50-1600 m/z

Ionization Mode: ESI– and ESI+

Total run time: 34 minutes.

Mobile Phase: A: Water + 0.1% Formic Acid; B. Methanol

Gradient: 98% A to 80% A in 1 minute, then to 5% A linear to 25 minute.

RESULTS & DISCUSSION (I)

The initial stage of the data mining was to perform PCA analysis for the entire dataset. The Scores Plot of the PCA analysis is shown in Figure 2a. Although the chemical profiles of all Hoodia spp. are similar according to our previous results, offsets of five (5) Hoodia samples analyzed, sampling errors and chemical deviations can still be noticed more closely to the other two Hoodia spp. This indicated that plant location has profound influence on chemical content. As further chemical analysis the plant location is not within the scope of this poster, we will present this part of the investigation elsewhere.

For the OPLS-DA analysis, we used as both of the two groups both biological and dietary supplements. We've performed this comparison 5 times, each with a different Hoodia product as group 1. The H. gordonii generated by ORS (OA) for each of the group comparison allowed us to obtain the leading markers. As a result of this 5 times of the leading markers obtained, each showed the key markers that have major contribution of differentiating the two Hoodia groups. From the five group lists, a group of 9 markers were commonly shown in all lists indicating their positive existence in the H. gordonii extracts. The identification of the key markers were obtained by elemental composition search, replacing the positions and mass from Hoodia gordonii in literature reference11. We now confirm this result further by the high mass TOF data obtained from the same injection.

REFERENCES


CONCLUSION

Key markers for H. gordonii were identified by using the UPLC/oaTOF MS/Multivariate Statistical Analysis workflow with structural confirmation using fragment ions obtained from the same LC injection.

For the Hoodia gordonii products tested in this work, we found to contain 9, no one of the 9 key markers were identified for H. gordonii products, we’ve performed this comparison 5 times, each with a different Hoodia product as group 1. The H. gordonii generated by ORS (OA) for each of the group comparison allowed us to obtain the leading markers. As a result of this 5 times of the leading markers obtained, each showed the key markers that have major contribution of differentiating the two Hoodia groups. From the five group lists, a group of 9 markers were commonly shown in all lists indicating their positive existence in the H. gordonii extracts.