

Optimization of a GC-MS method for the detection of bioactive compounds from the green peel of pomelo cultivar 'PO52'

ABSTRACT

Pomelo is the largest and most popular citrus fruit known to possess diverse health benefits. Sabah's fruit basket, Tenom, is famous for pomelo production. Among the pomelo cultivars being planted in Tenom, the PO52 cultivar is the most abundant one. To date, the bioactive compounds of the PO52 cultivar are not well studied. Although numerous aroma-active compounds from the peels of Malaysian pomelo have been reported, there are still many potential non-aromatic bioactive compounds that are yet to be discovered. In this study, we analysed the peel extract of pomelo PO52 using gas chromatography coupled to a single quadrupole mass spectrometry (GC-MS) approach. We first analysed the pomelo peel extracts using two different GC-MS methods, one can detect 45 organic compounds with good separation, while the other can detect phytosterols and pentacyclic triterpenoids in *Clinacanthus nutans* roots. In our study, these two methods were able to detect bioactive compounds from the pomelo peels but with a longer running time and the generated total ion chromatograms (TIC) were also not smooth. Therefore, we further optimized the two methods by changing the temperature ramping and holding times of the GC-MS. Compared to the first two methods, the optimized method had the shortest total running time (38 min) and the total ion chromatogram (TIC) produced was smooth throughout the run time. Furthermore, bioactive compounds that have not been reported for pomelo peel before, such as osthole, α -tocopherol, gamma-sitosterol, friedelan-3-one and others were also detected using this optimized method. In conclusion, the optimized method is suitable for the detection of non-aromatic compounds present in the PO52 peels that can be subsequently applied in the next stage for large-scale analysis.