

Isolation and characterization of triterpenes from the leaves of *Orthosiphon stamineus*

Abstract

Orthosiphon stamineus, Benth, belonging to the family Lamiaceae, is a medicinal plant growing wild in tropical countries. Seven triterpenes, ursolic acid, oleanolic acid, betulinic acid, hydroxybetulinic acid, maslinic acid, α -amyrin and β -amyrin have been isolated from the leaves of *Orthosiphon stamineus*. The structures of these compounds have been established by spectroscopic methods. α -Amyrin was isolated from this plant for the first time. © 2010.

Abstract

Problem statement: The lowland forest of Sabah is the most important habitat for orangutans and pygmy elephants. This is shown in the WWF-Malaysia's elephant tracking programme in which satellite-based Global Position System (GPS) collar devices are used to monitor their movement and the range of their habitats, as well as an aerial survey on orangutan's nest is performed to determine the spatial distribution pattern. We observed the activities of both species and we found that these species stay inside lowland forests with on flat ground or with gentle slopes, below 500 m elevation, which is mostly covered by natural forest. The density of orangutan's population was estimated to be higher in a certain location in natural lowland forests where the soils are more fertile. A suitable long term habitat for both species is located in the lowland dipterocarp forests. However, most of the pristine habitats in the lowland area have been converted into other land use activities such as a large scale plantation. This is due to the fact that most of the lowland forests are facing a continuous degradation process that will decrease its commercial value when it comes to generating revenue to the state government. As a result, the efforts to restore the forest are very vital.

Approach: This study described the technical and biological aspects in the forest restoration planning, prioritizing, implementation and monitoring process, integrated with the data on habitat utilization by orangutan in lowland degraded dipterocarp forest. Key habitats for orangutans were identified, forest condition were mapped and field works are carried out using a plot sampling technique to identify the diversity and density of the forest (current and potential), in order to support the forest restoration planning. A proper database on forest restoration and tree maintenance planning had been developed to enable the monitoring process.

Results: This study outlined some of the findings that include the main challenges that were faced in the forest restoration programme in North Ulu Segama (NUS), which could be

used as lessons and guideline in the future. Conclusion: A long term monitoring programme is important in order to have a successful forest restoration programme as well as to have the opportunity to study the impact of this restoration on the behavior of orangutan as a result of their adaptation to the new forest structure.