SUMMARY

Cinchona spp. are widely known as an old-world medicinal plant. So far, studies on cinchona at the molecular level, especially genetic diversity, are rarely reported. In Junghuhn Nature Reserve, there are suspiciously three kinds of cinchona plants. The diversity among the plants is intriguing to be evaluated as the study can contribute to the data pool of cinchona. The genetic diversity analysis of cinchona plants from Junghuhn Nature Reserve in this research was done using RAPD molecular marker. RAPD primers used include OPA-2, OPA-9, OPB-02, OPB-03, OPB-04, OPB-05, OPB-7 and OPJ-07. The data was analyzed using UPGMA and Maximum Parsimony of the MEGA7 program to obtain the phenogram specifying genetic relationships among the samples.

The result of the study shows that the RAPD profile of *Cinchona* spp. which consist of *Cinchona calisaya*, *Cinchona pubescent*, and *cinchona* sp. species reveal that polymorphism detected by each primer are OPA-2 produce ten bands with 90% polymorphism, OPA-9 produce twelve bands with 58.33% polymorphism, OPB-2 produce four bands with 75% polymorphism, OPB-3 produce three bands with 66.66% polymorphism, OPB-4 produce nine bands with 66.66% polymorphism, OPB-5 produce four bands with 75% polymorphism, OPB-7 produce six bands with 66.66% polymorphism, and OPJ-7 produce nine bands with 66.66% polymorphism. With the total polymorphism, is 70.62%.

Genetic diversity between *Cinchona* spp. is based on RAPD marker, which shows that *Cinchona calisaya* has the most distinctive profile from the other species. The analysis using UPGMA with coefficient of 0.200 shows that the three species are grouped into two cladistic groups, namely: Group I which consists of *Cinchona pubescent* and *Cinchona* sp., Group II consist of *Cinchona calisaya*, and one outgroup *Ixora* sp.; The closest relationship is between *Cinchona pubescent* and *Cinchona* sp. that has the p-distance value of 0.333. The topology of the dendrogram from Maximum Parsimony is consistent with UPGMA dendrogram topology.

Keywords: *Cinchona, genetic diversity, RAPD, Polymorphism*