Citation: Lai, P.S., Ho, W.S., Pang, S.L. & Ismail, J. (2011). Plant DNA Extraction Kit – *f*asTiP-X™. In *Proceedings of the 9th Malaysia Genetics Congress (MGC9): Appreciating the Richness of Nature through Genetics*. Pullman Hotel, Kuching, Sarawak, 28 – 30 September 2011. 3p. (CD-ROM)

Plant DNA Extraction Kit – *f*asTiP-X™

Lai Pei Sing[1], Ho Wei Seng[1], Pang Shek Ling[2] and Ismail Jusoh[3]

[1]Forest Genomics and Informatics Laboratory (fGiL), Department of Molecular Biology, Faculty of Resource Science and Technology, Universiti Malaysia Sarawak, 94300, Kota Samarahan, Sarawak
[2]Applied Forest Science and Industry Development (AFSID), Sarawak Forestry Corporation, 93250 Kuching, Sarawak

[3]Department of Plant Science and Environmental Ecology, Faculty of Resource Science and Technology, Universiti Malaysia Sarawak, 94300, Kota Samarahan, Sarawak
Email of corresponding authors: angel_aips@hotmail.com / wsho@frst.unimas.my

Abstract

Plant DNA extraction is prerequisite to any downstream DNA molecular application. However, the conventional DNA extraction from plant tissues are time consuming, tedious and labour intensive which involve liquid nitrogen and hazardous chemicals, such as CIA and phenol-chloroform. In addition, more than half of the DNA would be lost along this process as well. Hence, the development of rapid DNA extraction method, such as *f*asTiP-X kit, was greatly needed. *f*asTiP-X kit is a rapid and efficient plant DNA extraction kit which only involves 3 simple steps before PCR amplification. The basic concept of this kit is touch which is transferring plant samples into the extraction buffer; incubate to lyses the plant cells; and finally the solution can be directly use for further analysis. The detailed technical procedure for operating this kit is first by punching the fresh leaf using Harris micro punch®. Then, 6 punched leaf discs are incubated together with 50 µl of Extraction Buffer for 10 minutes in 95°C. After incubation, the incubated solution is mixed by inverting and tapping. Next, 120 µl of Dilution Buffer is added to the incubated solution. Eventually, the mixture can be directly used for PCR amplification. The overall process for the preparation of DNA for PCR amplification using *f*asTiP-X Kit can be completed in 20 minutes. Besides, it uses small amount (about 5mm^2) of samples which reduces the lost of sample to minimal. This kit is applicable in forestry forensic analysis, genetic diversity study and species and clone identification.

Introduction

*f*asTiP-X kit, is a plant DNA extraction Kit which able to extract DNA using limited amount of DNA in an extraction buffer. The DNA extracted using this kit is sufficient for PCR while at the same time, the amplification process is not inhibited. In the preparation of DNA for PCR amplification, *f*asTiP-X has the characteristics of rapid, simple and safe which helps in reducing the cost, time and also manpower for DNA extraction in a research. Moreover, this kit helps to resolve the most significant bottleneck that met by most of the high-throughput genotyping research. This is because the process of conventional DNA extraction is time consuming, tedious and labour intensive which involve liquid nitrogen and hazardous chemicals, such as CIA and phenol-chloroform. Besides, more than half of the DNA would be lost along the process. This makes the overall DNA extraction process constituting 30 to 60% of the total time required for a research (Bhattacharjee *et al.*, 2004). Hence, there is a need to develop a kit which is time and cost effective, less-labour intensive and safe is greatly needed.

Materials and Methods

The procedure for operating this kit is first by punching the fresh leaf using Harris micro punch®. Then, 6 punched leaf discs are incubated together with 50 µl of Extraction Buffer for 10 minutes in 95°C. After incubation, the incubated solution is mixed by inverting and tapping. Next, 120 µl of Dilution Buffer is added to the incubated solution. Eventually, the mixture can be directly used for PCR amplification.

Results and Discussion

The DNA extracted using *f*asTiP-X was successfully used for genotype screening using both EST-SSR and ISSR markers (Figure 1 and 2). Clear, distinct and scorable bands which are suitable for genotyping analysis were