ABSTRACTS (MASTER THESIS)

Discovery of prenyltransferase gene specific for phenylpropanoids

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Preny is a collective name of isoprenoid residues, which are often attached to aromatic compounds, either directly to the aromatic ring by *C*-*C* bound or via *O*- or *N*-atoms on the ring systems [1]. The most simple and abundant prenyl residue is dimethylallyl that is composed of 5 carbon atoms, and as minority geranyl- (C10) and farnesyl- (C15) residues occur in nature [2]. Prenylated compounds are frequently reported as biological active compounds isolated from various medicinal plants. The activities are fairly divergent according to their chemical structures, such as, anti-bacterial, anti-tumor, anti-HIV activities as well as estrogenic activity and anti-tyrosinase effect [3-6].

Prenyltransferase for aromatic substrate is the responsible enzyme for the biosynthesis of prenylated aromatic compounds. Thus far, many prenyltransferases are identified for flavonoids, phloroglucinols, coumarins, but that specific for simple phenylpropanoids (C6-C3) have not been identified. In this study, we made attempts to discover the first prenyltransferase gene for phenylpropanoids. The most well-known prenylated phenylpropanoid is artepillin C, which is diprenylated 4-coumaric acid. A representative plant that contains artepillin C in a high amount is *Baccharis dracunculifolia* (Asteraceae) originated in Brazil, which is an important ingredient of Brazilian propolis. Adding to this plant, some other plant species in Asteraceae contain this prenylated phenylpropanoid, while the content is generally low.

By use of large scale EST information of several medicinal plants collected by Kazusa DNA Reseaerch Institute, we could narrow down a candidate plant, from which a candidate gene coding for prenyltransferase was found. We are currently summarizing these results for publication.

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