Rubber of rubber elongation factor (ref) and small

Rubber world production in 2016 is 26.

9million tonnes It separated 46% of world rubber production and 54% of syntheticrubber production. The consumption is 27. 2 million tonnes. It is increase 1. 8%than 2015 (MREPC, 2017). Rubber is known as latex.

Latex is gotten from rubber tree andhad been used for since long ago. Latex has many special things that make it mostvital polymers that having a lot of proteins, organelles, mainly rubber particles, non-rubber particles, and serum(d'Auzac and Jacob, 1989). The hydrophobic coreof polyisoprene bordered by a lipo-protein complex layer called rubber particle (Wren, 1941; Nawamawatet al., 2011) and the particle membrane was exposed as a watery monolayer (Woodand Coornish, 2000; Siler et al., 1997; Nawamawat et al.

, 2011; Coornish et al. 1999). The particle membrane was predictable nearby 1. 5–3. 0 nm (Wren, 1941; Siler et al., 1997; Nawamawat et al., 2011). Rubber particles contain lipidsis 1.

6–3. 7% that classified as neutral lipids, glycolipids and phospholipids (Liengprayoon, 2008; Hasma and Subramaniam, 1986; Ho et al., 1976). Rhodes and Bishop (1930) alreadyidentified the phospholipids, the mainly phosphatidyl choline (PC) andethanolamine (PE), and the latex are contain phosphatidyl inositol (PI), serine(PS), glycerol (PG) and phosphatidic acid (PA) (Siler et al.

, 2008; Liengprayoon, 2008; Hasma, 1991). Phospholipidsrelated the linear polyisoprene chains ?-terminal phosphate group, even thoughthe ?-terminal

(the trans initiator group) might work together withproteins (Carretero-Gonzalez et al., 2010; Tarachiwin et al.

, 2005a; Tarachiwinet al., 2005b). The harmful responsibilities of the lipid polar head groups mightcross-link in ionic linkages, for example magnesium ion with the polymericchains phosphate or diphosphate terminal. Theproteins also contribute of the negative responsibility of the particlesurface. The further proteins want to explore besides the well-known rubberparticle-bound of rubber elongation factor (REF) and small rubber particleprotein (SRPP), it to elucidate the regulatory and molecular mechanisms ofrubber biosynthesis. Lately, Dai et al (2013) were identified 186 rubberparticle proteins. Siler et al. (1997) know the significantly depend on theenzymes and protein factors located on the rubber particles membranes from therubber yield (the rate of biosynthesis) and rubber quality (the distribution ofmolecular mass, Mr).

The major effortsare being complete to isolate the key enzymes or proteins related to rubberbiosynthesis in various rubber plants like Heveabrasiliensis, Parthenium argentatum, Ficus elastica and Taraxacum koksaghyz (Kanget al. 2000; Duan et al. 2006; Schmidt et al. 2010; Wahler et al. 2012). Gronover et al.

(2011) say that the assimilated proteins orprotein complexes catalyzed rubber biosynthesis at the superficial of rubberparticles. Themevalonate (MVA) pathway is the conventionally isoprenoid biosynthesis pathway meanwhilein 1950s. The rubber formation was derived from ahigh level of incorporation of radiolabelled pathway intermediates such asmevalonate

(Skilleter and Kekwick, 1971) and 3-hydroxy-3-methylglutarylcoenzyme A (HMG CoA) (Hepper and Audley, 1969) into rubber to support thecytosolic pathway.

Only in more years that are recent, the plastidic 1-deoxy-D-xylulose 5-phosphate/2-C-methyl-D-erythritol4-phosphate (MEP) pathway has been considering a possible alternative route forrubber biosynthesis. This pathway has been well characterizing, not only in bacterialbut also in plant species (Lichtenthaler, 1999; Rodriguez-Concepcion andBoronat, 2002). The expression of 1-deoxy-D-xylulose 5-phosphate synthase(DXPS) in Hevea latex and leavessuggests that the MEP pathway exists in the laticifer (Ko et al., 2003) andtherefore could provide an alternative means of generating IDP forcis-polyisoprene synthesis. IDP was produced Hevea cis-polyisoprene from biosynthesis pathway of plantisoprenoid (Kekwick, 1989). Rubber transferase (EC 2. 5. 1.

20) is a membrane-bound cis-prenyltransferase(CPT). It is an enzyme that catalyzing the rubber molecule elongation (Cornishand Xie, 2012) that makes a sequential condensation of isopentenylpyrophosphate with prenyl groups. Arabidopsisthaliana is the first identified as CPT plant (Oh et al., 2000). Asawatreratanakulet al. (2003) known two CPTs expressed in laticifers, were cloned in H. brasiliensis, and Schmidt et al. (2010b)find the three CPTs were identified and isolated in T.

koksaghyz. The enzyme that active the rubber particles were isolatedfrom all cytoplasmic components. It used in biochemical investigation as analternative of purified enzymes since an active rubber transferase.

During activerubber transferase, the enzyme has not yet been purified and its enzymaticnature remains elusive (Cornish and Xie, 2012). The rubber biosynthesis can producethe different class of the natural rubber. 2500 species of plants produced natural rubber (van Beilen andPoirier, 2007; Metcalfe, 1967). Even thought, H.

brasiliensis, P. argentatum(guayule), and T. koksaghyz known as pledgerubber crops (van Beilen and Poirier, 2007).

Notonly theirs, the natural rubber has also been identified in Ficus species (F. benghalesis, F. elastica and F. carica) (Kang et al.

, 2000a; Cornish, 2001a), Euphorbia species (E. etherophylla, and E. lactiflua)and Artocarpus heterophyllus(Mekkriengkrai et al., 2004), and Alstoniascholaris, the main source of this raw material. Alstoniascholaris (family: Apoceae) is a high perennial treecommonly distributed in China, India, Southeast Asia, and Australia that createtart white latex. This tree is a medicinal plant that produces a large amountof latex. The present study or A.

scholaris shows the pharmacognosticand phytochemical properties of various bioactive compounds. Some of themeticulous studies on this plant have proved its medical value beyond any doubtas mentioned motivating for exploring more information about this plant. Alstoniais known to be rich sources of monoterpenoid indole alkaloids with diversestructures and significant bioactivities, some of which have attractedattention as new drug leads as well as challenging targets for total synthesis. The latex is easily

collect from the green part of tree example young leavesand twigs. The latex of A.

scholaris known has several functions such aspharmacology. It can be used for remedy for toothache and neuralgia and treatthe ulcer. Althought, The information of A.

scholaris latex proteins are so limited. The latex proteins there for theinvestigation and identification of its proteins in rubber particles and theirtransferase activity need to observe. This study works on purification of A. scholaris rubber protein latex andidentified the micromorphology of lipid and rubberparticle from its latex of their size.