

Improvement of Cocoa Specific Aroma Precursors of Under-Fermented Cocoa Beans with Carboxypeptidases Addition



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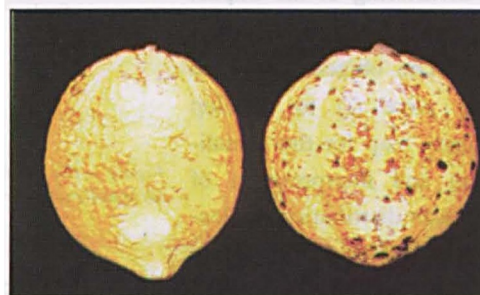
Cocoa specific aroma differentiation is very much influenced by processing especially fermentation and drying. Since Malaysia is not self-sufficient in cocoa bean supply and has to rely on imported beans especially from Indonesia; however, these beans are highly under-fermented and therefore has low cocoa aroma with excessive taste of bitterness and astringency.

Aroma precursor precursors in cocoa beans namely free amino acid, and hydrophilic peptides are produced during fermentation and the early stage of drying by the action of endogenous enzymes. Aspartic protease is responsible for the first part of protein degradation to produce hydrophobic peptides and hydrophilic free amino acids. Carboxypeptidase would react on the peptides to produce hydrophilic peptide and hydrophobic free amino acids.

Using carboxypeptidase B from porcine and carboxypeptidase Y from baker's yeast, cocoa aroma of the under fermented beans was improved and hydrophobic free amino acids (alanine, valine, isoleucine, leucine, phenylalanine and tyrosine) were predominantly produced. The peptide patterns of the samples treated with carboxypeptidases were very similar with those of the control. During prolong incubation, these enzymes resulted an increase in the concentration of methylpyrazines in the samples. The action of carboxypeptidases on hydrophilic oligopeptides at their carboxyterminal ends has produced oligopeptides, which are mostly hydrophilic oligopeptides and hydrophobic free amino acids. However, carboxypeptidase B from porcine pancreas was shown to be more prominent in producing cocoa-specific aroma. Study on flavour quality showed that carboxypeptidases addition did not have effect on the flavour quality. All samples treated had bitter, astringent, acid and low cocoa flavour compared to reference.



Under-fermented cocoa beans



Cocoa fruit of PBC 140

Reader Enquiry

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