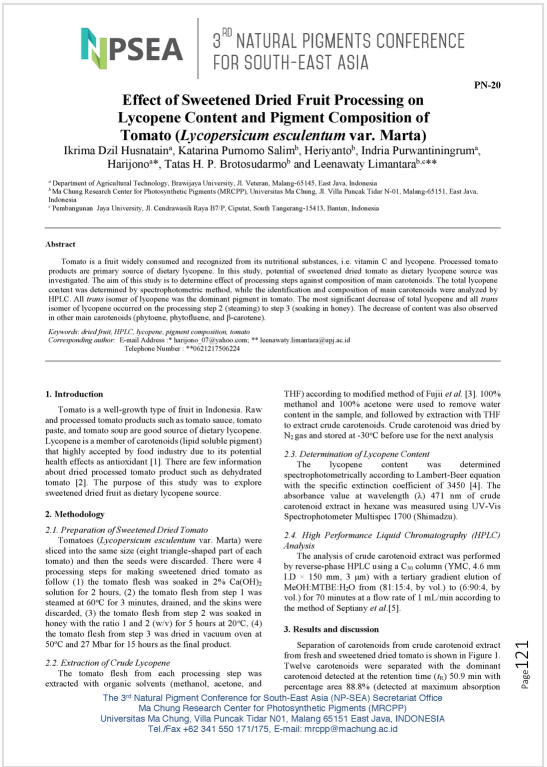
Digital Receipt

This receipt acknowledges that Turnitin received your paper. Below you will find the receipt information regarding your submission.

The first page of your submissions is displayed below.

Submission author:	Tatas Hardo Panintingjati Brotosu...
Assignment title:	Evaluasi Jurnal
Submission title:	Effect of Sweetened Dried Fruit Pr...
File name:	30._Effect_of_Sweetened-EDH.pdf
File size:	546.89K
Page count:	2
Word count:	1,486
Character count:	7,818
Submission date:	19-Jan-2018 05:17PM (UTC+0700)
Submission ID:	904314717



NPSEA | 3RD NATURAL PIGMENTS CONFERENCE FOR SOUTH-EAST ASIA

PN-20

Effect of Sweetened Dried Fruit Processing on Lycopene Content and Pigment Composition of Tomato (*Lycopersicum esculentum* var. Marta)

Ikrima Dzil Husnatain[a], Katarina Purnomo Salim[b], Heriyanto[b], Indria Purwantiningrum[a], Harijono[a]*, Tatas H. P. Brotosudarmo[b] and Leenawaty Limantara[b,c]**

[a] Department of Agricultural Technology, Brawijaya University, Jl. Veteran, Malang-65145, East Java, Indonesia
[b] Ma Chung Research Center for Photosynthetic Pigments (MRCPP), Universitas Ma Chung, Jl. Villa Puncak Tidar N-01, Malang-65151, East Java, Indonesia
[c] Pembangunan Jaya University, Jl. Cendrawasih Raya B7/P, Ciputat, South Tangerang-15413, Banten, Indonesia

Abstract

Tomato is a fruit widely consumed and recognized from its nutritional substances, i.e. vitamin C and lycopene. Processed tomato products are primary source of dietary lycopene. In this study, potential of sweetened dried tomato as dietary lycopene source was investigated. The aim of this study is to determine effect of processing steps against composition of main carotenoids. The total lycopene content was determined by spectrophotometric method, while the identification and composition of main carotenoids were analyzed by HPLC. All *trans* isomer of lycopene was the dominant pigment in tomato. The most significant decrease of total lycopene and all *trans* isomer of lycopene occurred on the processing step 2 (steaming) to step 3 (soaking in honey). The decrease of content was also observed in other main carotenoids (phytoene, phytofluene, and β-carotene).

Keywords: dried fruit, HPLC, lycopene, pigment composition, tomato
Corresponding author: E-mail Address : * harijono_07@yahoo.com; ** leenawaty.limantara@upj.ac.id
Telephone Number : **/62121750224

1. Introduction

Tomato is a well-growth type of fruit in Indonesia. Raw and processed tomato products such as tomato sauce, tomato paste, and tomato soup are good source of dietary lycopene. Lycopene is a member of carotenoids (lipid soluble pigment) that highly accepted by food industry due to its potential health effects as antioxidant [1]. There are few information about dried processed tomato product such as dehydrated tomato [2]. The purpose of this study was to explore sweetened dried fruit as dietary lycopene source.

2. Methodology

2.1. Preparation of Sweetened Dried Tomato

Tomatoes (*Lycopersicum esculentum* var. Marta) were sliced into the same size (eight triangle-shaped part of each tomato) and then the seeds were discarded. There were 4 processing steps for making sweetened dried tomato as follow (1) the tomato flesh was soaked in 2% $Ca(OH)_2$ solution for 2 hours, (2) the tomato flesh from step 1 was steamed at 60°C for 3 minutes, drained, and the skins were discarded, (3) the tomato flesh from step 2 was soaked in honey with the ratio 1 and 2 (w/v) for 5 hours at 20°C, (4) the tomato flesh from step 3 was dried in vacuum oven at 50°C and 27 Mbar for 15 hours as the final product.

2.2. Extraction of Crude Lycopene

The tomato flesh from each processing step was extracted with organic solvents (methanol, acetone, and THF) according to modified method of Fujii *et al.* [3]. 100% methanol and 100% acetone were used to remove water content in the sample, and followed by extraction with THF to extract crude carotenoids. Crude carotenoid was dried by N_2 gas and stored at -30°C before use for the next analysis

2.3. Determination of Lycopene Content

The lycopene content was determined spectrophotometrically according to Lambert-Beer equation with the specific extinction coefficient of 3450 [4]. The absorbance value at wavelength (λ) 471 nm of crude carotenoid extract in hexane was measured using UV-Vis Spectrophotometer Multispec 1700 (Shimadzu).

2.4. High Performance Liquid Chromatography (HPLC) Analysis

The analysis of crude carotenoid extract was performed by reverse-phase HPLC using a C_{30} column (YMC, 4.6 mm I.D × 150 mm, 3 µm) with a tertiary gradient elution of MeOH:MTBE:H_2O from (81:15:4, by vol.) to (6:90:4, by vol.) for 70 minutes at a flow rate of 1 mL/min according to the method of Septiany *et al.*[5].

3. Results and discussion

Separation of carotenoids from crude carotenoid extract from fresh and sweetened dried tomato is shown in Figure 1. Twelve carotenoids were separated with the dominant carotenoid detected at the retention time (t_R) 50.9 min with percentage area 88.8% (detected at maximum absorption

Page 121

The 3rd Natural Pigment Conference for South-East Asia (NP-SEA) Secretariat Office
Ma Chung Research Center for Photosynthetic Pigments (MRCPP)
Universitas Ma Chung, Villa Puncak Tidar N01, Malang 65151 East Java, INDONESIA
Tel./Fax +62 341 550 171/175, E-mail: mrcpp@machung.ac.id

Effect of Sweetened Dried Fruit Processing on Lycopene Content and Pigment Composition of Tomato (Lycopersicum esculentum var. Marta)

by Tatas Hardo Panintingjati Brotosudarmo

Submission date: 19-Jan-2018 05:17PM (UTC+0700)
Submission ID: 904314717
File name: 30._Effect_of_Sweetened-EDH.pdf (546.89K)
Word count: 1486
Character count: 7818

Effect of Sweetened Dried Fruit Processing on Lycopene Content and Pigment Composition of Tomato (Lycopersicum esculentum var. Marta)

ORIGINALITY REPORT

14%	12%	10%	0%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	umconference.um.edu.my Internet Source	3%
2	mro.massey.ac.nz Internet Source	2%
3	wrap.warwick.ac.uk Internet Source	1%
4	Chunglok, W.. "Immunoassay based on carbon nanotubes-enhanced ELISA for Salmonella enterica serovar Typhimurium", Biosensors and Bioelectronics, 20110415 Publication	1%
5	www.jstage.jst.go.jp Internet Source	1%
6	link.springer.com Internet Source	1%
7	www.dietsite.com Internet Source	1%