

Abstract

Indonesia has a various local sources of food containing anthocyanin; one of those is purple yam. Purple yam (*Dioscorea alata* L.) is interesting to be investigated because of its potential as a natural anthocyanin source, as well as can be used as an antioxidant. Utilization of purple yam as a source of anthocyanin and antioxidants to date has not been done. The production of purple yam flour is a way to make the material easy to use, flexible and has a long-term storage capacity. In the process of making purple yam flour, pre-heating treatment done is steam blanching. In the steam blanching process there will be enzyme inactivation, which will preserve the color, anthocyanin levels and antioxidant activity. The aim of this study was to determine the exact time of blanching on the production of purple yam flour, to determine the type of solvent for the extraction of purple yam anthocyanin, fractionation and identification of anthocyanin from purple yam with TLC, LC-MS and to know changes in anthocyanin levels as well as the antioxidant activity of purple yam during storage.

The study was conducted as follows : steam blanching on the production of purple yam flour; determination of type of solvent of methanol or ethanol acidified with HCl (12,06 N) 1% v/v; 3% v/v citric acid and 1% v/v tartaric acid, for the extraction of purple yam anthocyanins; identification of anthocyanin types by chromatography column that have the highest antioxidant activity (TLC and LC-MS); the anthocyanin changes and antioxidant activity of purple yams stored in space with different light intensity and RH levels.

The results showed that steam blanching purple yam would increase the anthocyanins extracted , total phenolic, antioxidant activity. Steam blanching 8, 12 minutes increased anthocyanins extracted 2.5 and 2.4 times and increased the total phenolic of 1.6 and 1.3 times. The highest anthocyanin extract was obtained from the Me-HCl solvent. The total phenolic and antioxidant activity of the extract did not differ between the use of the Me-HCl and Me-tartaric solvent. Anthocyanins identified with the LC-MS method were 9 types, namely cyanidin 3-caffeoyl-p-hydroxybenzoyl sophoroside-5-glucoside, pelargonidin 3-sophoroside-5-glucoside, alatanin 2, alatanin B, cyanidin 3- (6", 6" dihydroxybenzoyl sophoroside) -5-glucoside, alatanine C, cyanidin 3-p-hydroxybenzoyl sophoroside-5-glucoside and peonidin 3-caffeoyl-p-hydroxybenzoyl-sophoroside-5-glucoside. The room condition with RH 65%, light intensity of 150 lux at room temperature would decrease the moisture content, anthocyanin, phenolic compound and antioxidant activity are lower than the room storage with RH levels of 66-65% and light intensity of 10-200 lux.

Keywords: purple yam, anthocyanin, antioxidant activity, identification.

INTISARI

Antosianin merupakan pigmen alami tanaman, bisa terdapat pada bagian umbi, daun atau buah yang berwarna merah, ungu, biru atau kuning. Antosianin bermanfaat untuk kesehatan, karena kemampuannya sebagai antioksidan, antiinflamasi dan antikanker. Indonesia memiliki kekayaan lokal sumber bahan pangan mengandung antosianin yaitu uwi ungu. Penelitian uwi ungu (*Dioscorea alata* L.), dilakukan karena potensinya sebagai sumber antosianin alami, sebagai antioksidan. Tepung uwi ungu dibuat agar mudah digunakan, fleksibel dan tahan simpan. Pada pembuatan tepung uwi ungu dilakukan *steam blanching*. Proses *steam blanching* akan menginaktivasi enzim, mempertahankan kadar antosianin dan aktivitas antioksidan. Penelitian ini bertujuan menentukan waktu *steam blanching* pada pembuatan tepung uwi ungu, menentukan jenis pelarut untuk ekstraksi antosianin, fraksinasi dan identifikasi antosianin tepung uwi ungu dengan KLT dan LC-MS dan mengetahui perubahan stabilitas antosianin, aktivitas antioksidan tepung uwi ungu selama penyimpanan.

Penelitian ini dilakukan sebagai berikut: perlakuan *steam blanching* pada pembuatan tepung uwi ungu, penentuan jenis bahan pelarut metanol atau etanol yang diasamkan dengan HCl (12,06 N) 1% v/v; asam sitrat 3% v/v dan asam tartarat 1% v/v, untuk ekstraksi antosianin tepung uwi ungu yang dapat menghasilkan antosianin dengan aktivitas antioksidan tinggi, identifikasi jenis antosianin dengan fraksinasi kolom kromatografi, pada fraksi yang mempunyai aktivitas antioksidan tertinggi dengan KLT dan LC-MS, dan mengetahui perubahan antosianin dan aktivitas antioksidan tepung uwi ungu yang disimpan pada ruang dengan kekuatan cahaya, RH ruang yang berbeda.

Hasil penelitian menunjukkan *steam blanching* uwi ungu dapat meningkatkan antosianin terekstrak, total fenolik dan aktivitas antioksidan. *Steam blanching* 8 dan 12 menit meningkatkan antosianin 2,5 dan 2,4 kali dan meningkatkan total fenolik 1,6 dan 1,3 kali. Ekstrak antosianin terbesar diperoleh dari pelarut Met-HCl. Total fenolik dan aktivitas antioksidan ekstrak tidak berbeda antara penggunaan pelarut Met-HCl dan Me-asam tartarat. Antosianin teridentifikasi dengan KLT, LC-MS ada 9 jenis, yaitu sianidin 3-kafeoil-p-hidroksibensoil soforosida-5-glukosida, pelargonidin 3-soforosida-5-glukosida, alatanin 2, alatanin B, sianidin 3-(6'',6''dihidoksibensoil soforosida)-5-glukosida, alatanin C, sianidin 3-p-hidroksibensoil soforosida-5-glukosida dan peonidin 3-kafeoil-p-hidroksibensoil-soforosida-5-glukosida. Kondisi ruang simpan dengan RH 65 %, 150 lux, terjadi peningkatan kadar air, penurunan antosianin, senyawa fenolik dan aktivitas antioksidan lebih rendah dibanding penyimpanan pada ruang RH 66-85%, 10-200 lux.

Kata kunci : uwi ungu, antosianin, aktivitas antioksidan, identifikasi.