INTISARI

Struktur dinding sel lada putih yang keras menyebabkan rendemen minyak atsiri yang diperoleh rendah. Perlakuan gelombang mikro pada lada putih mampu merusak jaringan sel sehingga mempermudah destilasi minyak atsiri dan meningkatkan rendemen minyak atsiri. Tujuan penelitian adalah menentukan pengaruh varietas lada dan perlakuan gelombang mikro terhadap profil senyawa volatil, karakteristik (rendemen minyak atsiri, warna, bobot jenis, indeks bias, kelarutan dalam etanol 95%, bilangan asam), dan aktivitas antioksidan minyak atsiri lada putih.

Penelitian dilakukan dengan cara 50 gram lada putih varietas Lampung daun lebar, Jambi dan Merapin jumbo diletakkan ke dalam petridish berdiameter 15 cm dan dimasukkan ke dalam *oven microwave* pada daya 600 watt selama 90 detik. Setelah itu, lada putih dianalisis kadar air, kadar piperin, dan mikrostruktur jaringan selnya. Kadar air dan kadar piperin dianalisis menggunakan metode SNI 0004:2013, pengamatan mikrostruktur jaringan sel menggunakan *Scanning Electron Microscopy* (SEM). Minyak atsiri lada putih diperoleh dan dihitung rendemennya menggunakan metode *water-distillation* SNI 0004:2013. Profil senyawa volatil dianalisis menggunakan *Gas Chromatography-Mass Spectrometry*. Warna dianalisis menggunakan *chromameter*, bobot jenis dianalisis menggunakan piknometer, indeks bias dianalisis menggunakan refraktometer, kelarutan dalam etanol 95% dan bilangan asam menggunakan metode titrasi. Aktivitas antioksidan diukur menggunakan penghambatan DPPH (*1,1 diphenyl-2 picrylhydrazyl*).

Hasil penelitian menunjukkan bahwa varietas lada yang berbeda menghasilkan profil senyawa volatil, karakteristik, dan aktivitas antioksidan yang berbeda ($p<0,05$). Perlakuan gelombang mikro menyebabkan kerusakan dinding sel lada putih, menurunkan kadar air (17,43%), meningkatkan kadar piperin (10,57%), dan meningkatkan rendemen minyak atsiri (25%) serta menyebabkan perubahan pada profil senyawa volatil minyak atsiri lada putih varietas Lampung daun lebar. Warna menjadi lebih biru (nilai b* naik sebesar 201,99%), meningkatkan bobot jenis (1,27%), dan aktivitas antioksidan (7,4%), serta menurunkan kelarutan dalam etanol 95% (17,95%), dan bilangan asam (20,8%), sedangkan untuk indeks bias tidak dipengaruhi varietas lada dan perlakuan gelombang mikro.

Kata kunci : lada putih, perlakuan gelombang mikro, profil senyawa volatil, karakteristik

ABSTRACT

The structure of the hard white pepper cell wall causes low yield of essential oils to be obtained. Microwaves treatment on white pepper can damagecell tissue so as to facilitate the distillation of essential oils and increase the yield of essential oils. The research objective is determine the effect of pepper varieties and microwave treatment on profiles of volatile compounds, characteristics (essential oil yield, color, specific gravity, refractive index, 95% solubility in ethanol, and acid number), and antioxidant activity of white pepper essential oil.

Research conducted by 50 grams of white pepper varieties Lampung daun lebar, Jambi and Merapin jumbo placed into a 15 cm diameter petridish and put in a *microwave oven* at power 600 watts for 90 seconds. After that, white pepper was analyzed the water content, piperine content, and its cell tissue microstructure. Water content and piperine content were analyzed using the SNI 0004:2013 method, the observation of microstructure of cell tissue was analyzed using Scanning Electron Microscope (SEM). White pepper essential oils are obtained and the yield is calculated using water distillation method SNI 0004:2013. Profile of volatile compounds white pepper essential oils were analyzed using Gas Chromatography-Mass Spectrometry. The colors were analyzed using chromameter, specific gravity was analyzed using a picnometer, the refractive index was analyzed using a refractometer, solubility and acid numbers using the titration method. Antioxidant activity was measured using DPPH inhibition (*1,1 diphenyl-2 picrylhydrazyl*).

The results of the study showed that different pepper as variet produced different profiles of volatile compounds, characteristics, and antioxidant activity ($p<0.05$). Microwaves preliminary treatment cause damage to the cell wall of white pepper, lower the water content (17.43%), increased piperine content (10.57%), and increased the essential oil yield (25%) and cause changes in the profile of volatile compounds white pepper essential oil Lampung daun lebar varieties. Color becomes bluer (b*value rises by 201.99%), increased specific gravity (1.27%) and antioxidant activity (7.4%), decreased solubility in 95% ethanol (17.95%) and acid number (20.8%) while for the refractive index it was not affected by pepper varieties and microwaves preliminary treatment.

Keywords : white pepper, microwave treatment, profile of volatile compounds, characteristics