

ABSTRAK

Octa Rogabe: Pengaruh Suhu Penyeduhan Teh Hijau dan Teh Hitam Khas Sidamanik Terhadap Karakteristik Sensori dan Aktivitas Antioksidan. Skripsi. Prodi Gizi. Fakultas Teknik. Universitas Negeri Medan. 2026

Tingginya prevalensi penyakit degeneratif di Provinsi Sumatera Utara mendorong pentingnya pemanfaatan pangan fungsional yang kaya antioksidan, salah satunya teh. Teh hijau dan teh hitam mengandung senyawa bioaktif seperti polifenol, katekin, *theaflavin*, dan *thearubigin* yang berperan dalam menangkal radikal bebas. Suhu penyeduhan dapat memengaruhi ekstraksi senyawa bioaktif dan karakteristik sensori teh. Perbedaan karakteristik teh hijau dan teh hitam khas Sidamanik akibat proses pengolahan yang berbeda juga memengaruhi respons terhadap suhu penyeduhan. Oleh karena itu, penelitian ini bertujuan untuk mengkaji pengaruh suhu penyeduhan terhadap karakteristik sensori, fisikokimia, dan aktivitas antioksidan teh hijau dan teh hitam khas Sidamanik.

Penelitian dilaksanakan di Laboratorium Analisis Gizi dan Biokimia Fakultas Teknik Universitas Negeri Medan, dan Laboratorium Instrumen Pusat Fakultas Teknologi Pertanian Universitas Andalas, pada bulan Januari sampai Februari 2026. Desain penelitian yang digunakan adalah eksperimen dengan rancangan faktorial 2×2 , terdiri dari dua faktor yaitu jenis teh (teh hijau dan teh hitam) dan suhu penyeduhan (70°C dan 100°C), dengan dua kali ulangan sehingga menghasilkan 8 satuan percobaan. Parameter sensori yang diuji meliputi warna, aroma, rasa, dan *aftertaste* melalui uji hedonik serta mutu hedonik. Parameter fisikokimia yang dianalisis meliputi kadar polifenol, kadar tanin, dan kadar ekstrak dalam air. Aktivitas antioksidan dianalisis menggunakan metode DPPH dengan parameter IC_{50} . Data penelitian dianalisis menggunakan *Two-Way Analysis of Variance* (ANOVA) dan uji lanjut *Bonferroni Pairwise Comparisons*. Penentuan perlakuan optimal dilakukan menggunakan metode *desirability* berdasarkan respons uji hedonik, kadar polifenol, kadar tanin, dan aktivitas antioksidan.

Hasil penelitian menunjukkan bahwa suhu penyeduhan berpengaruh nyata terhadap sebagian besar parameter sensori, kadar polifenol, kadar tanin, kadar ekstrak dalam air, dan aktivitas antioksidan. Penyeduhan pada suhu 100°C menghasilkan warna seduhan lebih pekat, aroma lebih kuat, kadar senyawa bioaktif lebih tinggi, serta aktivitas antioksidan lebih baik dibandingkan suhu 70°C . Teh hijau memiliki kadar polifenol dan aktivitas antioksidan tertinggi, sedangkan teh hitam menunjukkan tingkat penerimaan sensori yang lebih baik pada beberapa atribut. Perlakuan terbaik secara fungsional dan sensori diperoleh pada teh hitam suhu 100°C dengan nilai *desirability* sebesar 0,606.

Kata Kunci : teh hijau; teh hitam; suhu penyeduhan; aktivitas antioksidan; fisikokimia; sensori.

ABSTRACT

Octa Rogabe: *The Effect of Brewing Temperature on the Sensory Characteristics and Antioxidant Activity of Sidamanik Green Tea and Black Tea.* Thesis. Nutrition Study Program. Faculty of Engineering. State University of Medan. 2026

The high prevalence of degenerative diseases in North Sumatra Province highlights the importance of utilizing antioxidant-rich functional foods, including tea. Green tea and black tea contain bioactive compounds such as polyphenols, catechins, theaflavins, and thearubigins, which play a role in scavenging free radicals. Brewing temperature can affect the extraction of bioactive compounds and the sensory characteristics of tea. Differences in the characteristics of Sidamanik green tea and black tea due to different processing methods may also influence their responses to brewing temperature. Therefore, this study aimed to investigate the effects of brewing temperature on the sensory and physicochemical characteristics and antioxidant activity of Sidamanik green tea and black tea.

The study was conducted at the Nutrition and Biochemistry Analysis Laboratory, Faculty of Engineering, Universitas Negeri Medan, and the Central Instrument Laboratory, Faculty of Agricultural Technology, Universitas Andalas, from January to February 2026. An experimental design with a 2×2 factorial arrangement was employed, consisting of two factors: tea type (green tea and black tea) and brewing temperature (70°C and 100°C), with two replications, resulting in eight experimental units. The sensory parameters evaluated included color, aroma, taste, and aftertaste using hedonic and hedonic quality tests. The physicochemical parameters analyzed included polyphenol content, tannin content, and water extract content. Antioxidant activity was analyzed using the DPPH method with IC_{50} as the parameter. Data were analyzed using Two-Way Analysis of Variance (ANOVA), followed by Bonferroni Pairwise Comparisons. The optimal treatment was determined using the desirability method based on hedonic test responses, polyphenol content, tannin content, and antioxidant activity.

The results showed that brewing temperature had a significant effect on most sensory parameters, polyphenol content, tannin content, water extract content, and antioxidant activity. Brewing at 100°C produced a darker infusion color, stronger aroma, higher levels of bioactive compounds, and better antioxidant activity than brewing at 70°C. Green tea exhibited the highest polyphenol content and antioxidant activity, whereas black tea showed better sensory acceptance for several attributes. The optimal treatment based on both functional and sensory considerations was black tea brewed at 100°C, with a desirability value of 0.606.

Keywords: green tea; black tea; brewing temperature; antioxidant activity; physicochemical; sensory.