

## **ABSTRAK**

### **IDENTIFIKASI MUTU TEH (*Camellia Sinensis L.*) ORTHODOKS PRODUK PTPN VIII RANCABALI BANDUNG MENGGUNAKAN UV - VIS SPECTROSCOPY DAN KEMOMETRIKA**

**Oleh**

**Agung Iman Santoso**

Teh hitam merupakan teh yang dalam proses pengolahannya melalui proses fermentasi sedangkan teh hijau diolah tanpa melalui proses fermentasi. Pengujian ketepatan mutu teh di PTPN VIII Rancabali Bandung dinamakan *green dhoole testing* dengan menggunakan petugas kontrol kualitas. *Green dhoole testing* bertujuan untuk memberikan penilaian bubuk teh hasil oksidasi enzimatis untuk menentukan lamanya oksidasi enzimatis yang optimal. Uji organoleptik memiliki relevansi yang tinggi dengan mutu produk karena berhubungan langsung dengan selera konsumen. Maka penelitian ini dilakukan untuk mengetahui dan mengidentifikasi mutu teh (*Camellia Sinensis L.*) Orthodoks Produk PTPN VIII Rancabali Bandung menggunakan UV - VIS Spectroscopy dan kemometrika. Sampel teh diekstraksi menggunakan aquades. Kemudian dimasukan ke dalam *holders system* dan diambil nilai absorbansinya menggunakan *UV - Vis Spectroscopy* pada panjang gelombang 190 - 1100 nm. Hasil klasifikasi menunjukkan bahwa metode PCA dan SIMCA mampu mengidentifikasi secara

akurat mutu teh hitam Orthodoks PTPN VIII Rancabali dengan *UV - Vis Spectroscopy*. Pada pengembangan model SIMCA kombinasi *standard normal variate* (SNV) dan *moving average 9 segmen* menghasilkan nilai PC1 sebesar 84%, dan PC2 sebesar 7%. Sedangkan untuk hasil matriks konfusi pada data kombinasi SNV dan *moving average 9 segmen* pada panjang gelombang 190 - 1100 nm pada kelompok BP I + PF II menunjukkan nilai akurasi (AC) sebesar 100%, sensitivitas (S) 100% dan spesifisitas (SP) sebesar 100%. Pada kelompok BP I + BM menunjukkan nilai akurasi (AC) sebesar 100%, sensitivitas (S) 100% dan spesifisitas (SP) sebesar 100%. Pada kelompok PF II + BM menunjukkan nilai akurasi (AC) sebesar 92%, sensitivitas (S) 89% dan spesifisitas (SP) sebesar 94%.

**Kata kunci :** *green dhoool testing, principal component analysis (PCA), soft independent modelling of class analogy (SIMCA), teh hitam, UV - VIS spectroscopy.*

## **ABSTRACT**

### **QUALITY IDENTIFICATION OF ORTHODOKS TEA (*Camellia Sinensis L.*) PTPN VIII PRODUCT RANCABALI BANDUNG USING UV - VIS SPECTROSCOPY AND THE CHEMOMETRIC**

**By**

**Agung Iman Santoso**

Processing black tea through a fermentation process, while green tea is processed without going through the fermentation process Testing the accuracy of tea quality at PTPN VIII Rancabali, Bandung is called green dhool testing and using a quality control officer. Green dhool testing aims to provide an evaluation of tea powder from enzymatic oxidation to determine the optimal duration of enzymatic oxidation. Organoleptic tests have high relevance to product quality because they relate directly to consumer tastes. So this research was conducted to find out and identify the quality of tea (*Camellia Sinensis L.*) Orthodox Products PTPN VIII Rancabali Bandung using UV-VIS spectroscopy and chemometrics. Tea samples were extracted using distilled water, then the results of extraction were entered into system holders and absorbance values were taken using UV - Vis spectroscopy at a wavelength of 190 - 1100 nm. The classification results show that the PCA and SIMCA methods are able to identify accurately the quality of PTPN VIII Rancabali orthodox black tea with UV - Vis spectroscopy. In the

development of SIMCA models of the combination of the standard normal variate (SNV) and the moving average of 9 segments, it resulted PC1 value is 84%, and PC2 is 7%. While for the results of the confusion matrix on the SNV combination data and moving average 9 segments at wavelength 190 - 1100 nm in the BP I + PF II group showed an accuracy value (AC) of 100%, sensitivity (S) 100% and specificity (SP) of 100%. In the BP I + BM group shows the value of accuracy (AC) of 100%, sensitivity (S) 100% and specificity (SP) of 100%. In the PF II + BM group the value of accuracy (AC) was 92%, sensitivity (S) 89% and specificity (SP) of 94%.

**Keywords :** black tea, green dhool testing, UV - VIS spectroscopy, principal component analysis (PCA), soft independent modeling of class analogy (SIMCA).