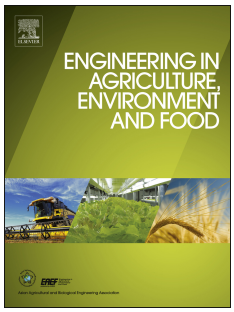
Accepted Manuscript



Prediction of beef freshness attributes using reflectance spectroscopy

Chang-Hyun Choi, Dae-Hyun Lee, Yong-Joo Kim, Byung-Sam Kim, Jong-Hun Kim

PII: S1881-8366(17)30008-3

DOI: 10.1016/j.eaef.2017.09.001

Reference: EAEF 158

To appear in: *Engineering in Agriculture, Environment and Food*

Received Date: 8 January 2017

Revised Date: 6 August 2017

Accepted Date: 10 September 2017

Please cite this article as: Choi C-H, Lee D-H, Kim Y-J, Kim B-S, Kim J-H, Prediction of beef freshness attributes using reflectance spectroscopy, *Engineering in Agriculture, Environment and Food* (2017), doi: 10.1016/j.eaef.2017.09.001.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

ACCEPTED MANUSCRIPT

Prediction of Beef Freshness Attributes using Reflectance Spectroscopy

Chang-Hyun Choi, Dae-Hyun Lee, Yong-Joo Kim*, Byung-Sam Kim, Jong-Hun Kim

(* phone: +82-10-9811-5290; fax: +82-42-823-6246; e-mail: babina@cnu.ac.kr)

ABSTRACT

This study was performed to determine the proper conditions for measurements of reflectance spectra, and to develop models to predict the freshness attributes of beef using visible and near infrared (NIR) spectroscopic technique. The measured attributes for beef freshness were volatile basic nitrogen (VBN), thiobarbituric acid reacted substance (TBARS), total viable counts (TVC), color (CIE L*, a*, b* values), and pH value. A total of 240 beef spectra were collected during the storage time. Partial least squares (PLS) models were developed, to predict freshness attributes for beef samples. The appropriate spectral regions of PLS models to predict freshness attributes of beef were found in the range of 550~1000 nm. VBN and TVC models showed a good relationship between the predicted and the measured values. The results showed that NIR spectroscopy would be one of the high potential tools to determine beef freshness in a real-life purchase environment.

Keywords: beef, freshness, near infrared, reflectance spectrum, partial least squares

1. INTRODUCTION

Consumers want to buy good quality beef in the market. Appearance, freshness, eating quality, and nutritional value are important characteristics in evaluating beef quality. Consumers use intrinsic and extrinsic quality cues in a real-life purchase environment. For

Download English Version:

https://daneshyari.com/en/article/8878692

Download Persian Version:

https://daneshyari.com/article/8878692

Daneshyari.com