



ChemTech

International Journal of ChemTech Research

CODEN (USA): IJCRGG, ISSN: 0974-4290, ISSN(Online):2455-9555

Vol.9, No.11 pp 218-223, 2016

## The Effect of Boiling on Nitrate and Nitrite Contents in Celery (*Apium graveolens L.*)

Jansen Silalahi\*, Flora Sitanggang, Muchlisyam

Department of Pharmaceutical Chemistry  
Faculty of Pharmacy, University of Sumatra Utara, Medan Indonesia 20155

**Abstract :** The purpose of this study was to determine the effect of boiling using demineral and mineral water on the contents of nitrate and nitrite in celery.

Celery used in this study was purchased from a local market at Pajak Sore Padang Bulan Medan. Celery was boiled with varying boiling time, 2, 4 and 6 minutes using demineral water (distilled water) and mineral water (tap water). Nitrite was identified with sulfanilic acid reagent and N-(1-naphthyl) ethylenediamine dihydrochloride (NED). Identification of nitrate was done by ferrous sulfate solution and concentrated sulfuric acid. Determination of nitrite was conducted by visible spectrophotometer using a coloring reagent NED at maximum wavelength of 540 nm. Nitrate was determined after reduction into nitrite and then analyzed as nitrite.

The results showed that the boiling time and the type of water used affecting levels of nitrate and nitrite in celery. Levels of nitrate and nitrite in fresh celery were 52.17 mg/kg and 25.57 mg/kg respectively. Levels of nitrate and nitrite were changed during boiling process; and the type of water was also influential. Levels of nitrite after boiling process for 6 minutes using demineral water decreased from initial level (25.57 mg/kg) to 11.86 mg/kg; while nitrate level decreased from 52.17 to 16.35 mg/kg. Levels of nitrite after boiling process for 6 minutes using tap water decreased from initial level (25.57 mg/kg) to 13.39 mg/kg; while nitrate level decreased from 52.17 to 22.20 mg/kg. The nitrite and nitrate contents in celery which boiled with demineral water differently affected; nitrate decreased from 52.17 mg/kg to 16.34 mg/kg (68.6%) and nitrite from 25.57 mg /kg to 11.85 mg /kg (54. 2%), while boiling with mineral water on nitrate decreased from 52.17 mg / kg to 22.20 mg/kg (57%) and the nitrite from 25.57 mg/kg to 13.39 mg / kg (48%).

The effect of boiling using demineral water was more effective to decrease nitrate and nitrite than using mineral water.

**Keywords:** celery, boiling, nitrite, nitrate, visible spectrophotometer.