

Measurement of total antioxidant capacity of selected infusions using Folin-Ciocalteu method

Equipment/Material:

- Spectrophotometer
- quartz cuvetts
- Folin-Ciocalteu's reagent
- tea or coffee sample
- caffeic acid standard (external standard)
- graduated cylinders
- Automatic pipets
- 5 mL, 10 mL, 100 mL volumetric flasks
- waste container
- 0.71 mol/L Na₂CO₃ (35 g/250 mL)
- methanol,

Procedure:

1. Preparation of caffeine standard solutions:

A stock standard of caffeic acid prepare by dissolving about 30 mg of caffeine in 5 mL methanol in a volumetric flask (5 mL). Working standards prepare by pipetting the right amount of the stock standard solution into separate volumetric flasks (10 mL) to produce concentrations of 0, 12, 24, 36, 50 and 60 µg/10 mL, respectively standard solution. For each flask add 500 µL Folin-Ciocalteu's reagent. After 3 min add 1 mL of 0.71 mol/L Na₂CO₃ and diluting to volume with H₂O. The absorbance of each solution measure at absorption maximum of 765 nm using 10 mm quartz cuvette after 30 min of incubation at room temperature in the dark. The absorbance values then plotte against concentrations to generate a standard calibration curve.

2. Sample coffee or tea preparation:

100 mL of boiling water add to 250 mL beaker containing 0.2 g of coffee or tea respectively. The coffee or tea preparations stir and let it brew for 20 minutes. Then filter through a paper filter.

To aliquot (500 µL) of the drink sample drawn with a pipette and place into a 10 mL volumetric and add 500 µL Folin-Ciocalteu's reagent. After 3 min add 1 mL of



0.71 mol/L Na_2CO_3 and dilute to volume with H_2O . The absorbance of each solution measure at absorption maximum of 765 nm using 10 mm quartz cuvette after 30 min of incubation at room temperaturę in the dark.

3. Calculations:

The results express as caffeic acid equivalent in mg/g of tea or coffee.

