iCheck Fluoro

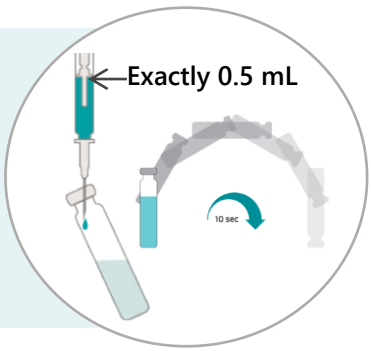
Measuring Vitamin A in Wheat and Maize Flour

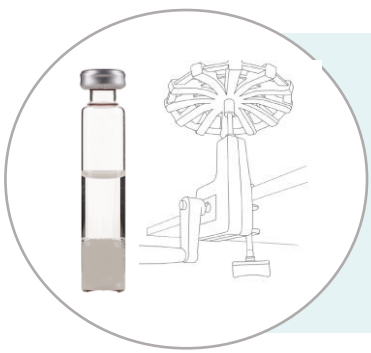
Sample Preparation

- Weigh in your flour and dilute it with distilled or bottled water in ratio 1:5 for samples fortified at 1-5 mg/kg. Increase the ration to 1:10 for samples fortified at 5-10 mg/kg.
- Shake the sample solution until it becomes a homogenous suspension. Record the final volume for dilution factor calculation.

Sample Injection

- Shake the suspension again and quickly take up 0.7 mL of the solution into syringe.
- Place the needle on syringe and adjust volume to exactly 0.5 mL.
- Inject 0.5 mL into Fluoro reagent vial and shake the vial vigorously for 10 seconds. Let the vial stand for min. 5 minutes.



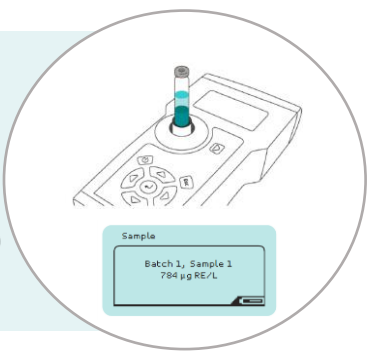


Phase Separation

- Centrifuge the vial using manual hand centrifuge for a few minutes.
- Clear phase separation must be visible in the vial. The upper phase, must be clear without any particles floating or adhered to the inner side of the glass.

Measurement and Calculation

- Place the vial in the iCheck Fluoro and measure.
- Multiply the result displayed with dilution factor to get concentration of vitamin A in flour.
- Correct final result with the average flour background (matrix effect) of 0.65 mg/kg, or, if available, the result with unfortified flour.



Ref.: 2014_Laillou_Assessment of a portable device to quantify vitamin A in flour, sugar, milk_FNB

BioAnalyt

iCheck Fluoro
Calculations

1. **iCheck Fluoro measurement range is 50 – 3000 µg/L. If your sample is above this range, you need to dilute it.**

Sample Type	Expected Concentration (mg RE/kg=ppm)	Dilution	Sample Weight (g)	Final Diluted Sample Volume (mL)
Wheat or Maize Flour	1 – 5 ppm	1 : 5	20	100
			100	500
			200	1000
	5 – 10 ppm	1 : 10	10	100
			50	500
			100	1000

2. **Dilution Factor (DF) = Total Diluted Sample Volume [mL] / Sample [g]**

3. **Measured Vitamin A [mg RE/kg] =**
   (iCheck Fluoro Result [µg RE/L] x DF / 1000) - (matrix effect)*

**Flour may have significant background fluorescence and cause overestimation by, for example, a factor of 0.65. It is recommended to assess this with unfortified flour sample.*

4. **Vitamin A Units Conversion**
   1 mg Vitamin A = 1 mg retinol = 1 mg retinol equivalents (RE)
   - 1 mg = 1 000 µg
   - 1 mg = 3333 International Units (IU)
   - 1 µg = 3.33 IU
   - 1 µg = 0.003 µmol

   Vitamin A compounds added to foods are
   - retinyl palmitate: 1 µg retinol = 1.83 µg retinyl palmitate
   - retinyl acetate: 1 µg retinol = 1.51 µg retinyl acetate

5. **For the information on the accuracy of the result with iCheck please refer to the Performance Guide.**