



# Quick Guide for iCheck Carotene

## Total carotenoids in juices and beverages

Read the [iCheck Carotene User Manual](#) before getting started. Perform "Device Control" as instructed in the User Manual.

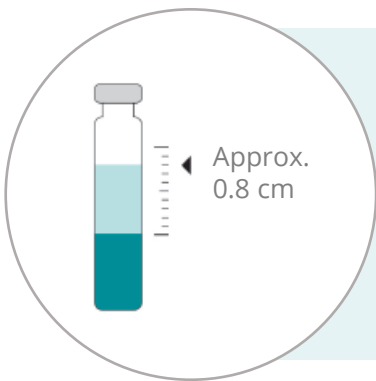
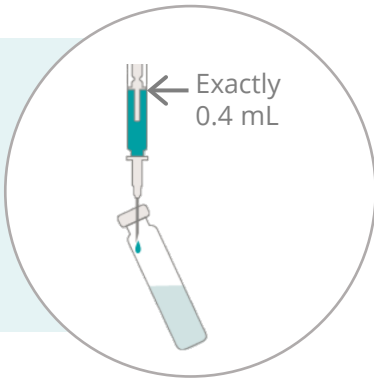


### Step 1. Sample Preparation

- Dilute your sample to fit the measurement range of iCheck Carotene. See next page for more detailed dilution instructions.
- Ensure that the diluted sample is homogenous - shake it vigorously for approximately 10 seconds.

### Step 2. Sample Injection

- Quickly draw up approx. 0.6 mL of the solution into a syringe. Attach the needle and adjust the volume to exactly 0.4 mL, while pointing the needle up.
- Inject the 0.4 mL solution into new Carotene reagent vial and shake it vigorously for 10 seconds.

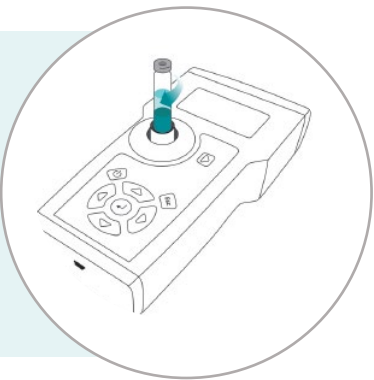


### Step 3. Phase Separation

- Incubate the vial for 5 minutes.
- You must now observe two phases; upper phase must appear clear and be approx. 0.8 cm.
- If no clear upper phase is visible, centrifuge the vial. You can order a manual centrifuge from BioAnalyt.

### Step 4: Measurement

- Place the vial in the measurement chamber of the iCheck Carotene and select the "Other Sample" mode. Press the green button to measure.
- Note down the result displayed, use the 2<sup>nd</sup> page instruction to calculate the concentration in undiluted sample.



For technical support email us: [support@bioanalyt.com](mailto:support@bioanalyt.com)

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Sample Dilution

The linear range of iCheck Carotene is 0.15 – 15.00 mg/L. If the expected carotenoid levels in your sample exceed this range, you will need to dilute the sample.

Sample Type	Expected Carotenoid Conc. [mg/L]	Dilution	Sample Volume [mL]	Final Diluted Sample Volume [mL]
Juices and beverages	15 - 100	1:10	10	100
			50	500
			100	1000
	100 - 250	1:20	5	100
			25	500
			50	1000

The value displayed on the iCheck Carotene after measurement will reflect the concentration of total carotenoid in the diluted sample. To obtain the original total carotenoid concentration, you must first calculate the dilution factor

according to the following formula:  $DF = \frac{Total\ sample\ solution\ volume\ (mL)}{Premix\ weight\ (g)}$

Once you have calculated the dilution factor, multiply the iCheck Carotene result by the dilution factor:

$Carotenoids\ in\ sample\ (\frac{mg}{L}) = iCheck\ Carotene\ result\ (\frac{mg}{L}) \times DF$

Carotenoids in Juices and Beverages

Carotenoids are pigments responsible for the red to yellow color of fruits and vegetables. Carrot juice naturally contains high levels of carotenoids, especially β-carotene, ranging from 50–150 mg/L depending on variety and processing. In fortified beverages, β-carotene is typically added at 2–20 mg/L to enhance both nutrition and color.

Carotenoids serve both visual and functional roles in beverages. In carrot juice, they indicate raw material quality and contribute to its vibrant appearance. In fortified products, they replace synthetic colorants and improve the health profile of the drink. Their retention during processing and storage is vital for product consistency.

Carotenoids offer antioxidant protection, helping reduce oxidative stress. β-carotene is a provitamin A, supporting vision, immunity, and skin health. Lutein and zeaxanthin also promote eye health and may lower the risk of age-related macular degeneration. Juices provide a convenient way to boost carotenoid intake.

Measuring carotenoids ensures product quality, accurate labeling, and regulatory compliance. Their levels can decline due to processing, light, and oxygen exposure. Monitoring helps preserve nutritional value, ensure shelf-life stability, and build consumer trust—especially in products like carrot juice, where carotenoids are a key selling point.

References:

- C. M. Stinko, et al., July 2019, Food Chemistry
- K. D. Sharma, et al. vol. 49,1 2012, J.of food science and technology