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## **PORTABLE EQUIPMENT FOR QUANTITATIVE ANALYSIS OF VITAMINS AND MINERALS IN FORTIFIED FOODS**

### **Background:**

Foods are a major source of nutrients, including vitamins and minerals. Unfortunately not everybody can afford to buy or has access to good quality and diverse foods that would ensure adequate intake of nutrients, especially vitamins and minerals. Food fortification is a way to address micronutrient deficiencies. Food fortification consists of adding vitamins and minerals (e.g. iodine, iron or vitamin A) to widely and frequently consumed staple foods like salt, flour, oil or sugar. Populations that consume adequate amounts of fortified foods as part of their diet receive the necessary intake of vitamins and minerals. Food fortification has therefore become a proven intervention, and in certain countries is mandatory, as it can address vitamin and mineral deficiencies through large-scale programmes.

### **Quantitative analysis of vitamins and minerals:**

In order to quickly determine levels of vitamins and minerals in fortified foods (e.g. to confirm the fortification level or the claims on the label) an easy-to-use measuring device has been developed based on fluorometric or photometric analytical methods. Until now quantitative analysis could be conducted only in laboratories using specialised equipment and analytical methods (like High-Powered Liquid Chromatography or Atomic Absorption Spectrometry). Portable fluorometers and photometers using light emitting diode (LED) technology are now available to determine levels of vitamin A in vegetable oil or solid foods, iodine in salt, iron in solid foods, etc., without requiring any additional laboratory equipment or consumables.

Each device is specific and corresponds to a particular food fortificant. Together with reagent kits, the devices allow quicker and cheaper but still accurate and precise qualitative analysis.

### **Use of devices**

The devices are suitable for field use without the need for a laboratory. Inspectors or border control officers can easily use them. They are highly suitable where sample analysis is not a regular or frequent occurrence.

No laboratory skills are required to use the devices. (A basic training of 1-2 hours is available through self-taught instructions).

It takes less than 10 minutes to determine vitamin A and iodine levels and about 30-60 minutes to determine iron levels in foods. The weight of fluorometers and

photometers is about 2 kg and they can therefore be transported easily. Electricity is needed to operate fluorometers and photometers.

**Available devices:**

The materials below were created to make ordering easy. Please note reagents need to be ordered separately. Reagents are available in sets of 100, i.e. each set is suitable for 100 tests. Sets contain the syringes and needles needed for sample preparation.

Analysis of **vitamin A** (retinyl palmitate and retinyl acetate) in vegetable oil  
S0000226 Portable Photometer/Vitamin A in vegetable oil (iCheck™ Chroma)  
S0000256 Reagents for S0000226, PAC-100

Analysis of **vitamin A** (retinyl palmitate, retinyl acetate and retinol) in food and biological fluid  
S0000227 Portable Fluorometer /Vitamin A in food (iCheck™ Fluoro)  
S0000257 Reagents for S0000227, PAC-100

Analysis of **potassium iodate** (KIO<sub>3</sub>) in edible salt (iCheck™ Iodine)  
S0000228 Portable Photometer / Iodine in salt  
S0000258 Reagents for S0000228, PAC-100

Analysis of **iron** (ferrous and ferric iron) in vitamin premix, flour, beverages, fish and soy sauce  
S0000229 Portable Photometer / Iron in food (iCheck™ Iron)  
S0000259 Reagents for S0000229, PAC-100

To prepare a sample when determining vitamin A and iron in solid foods a centrifuge is needed. This manually powered centrifuge is available:

S0000255 Manual centrifuge for S0000227, S0000229

For more information, contact:

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