USING WYD CHECKER MACHINE TO DETERMINE IODINE CONTENT IN SALT SAMPLES

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OVERVIEW OF WYD CHECKER MACHINE

• WYD Iodine Checker is a single-wavelength spectrophotometer that measures iodine level (mg/kg or ppm) in salt based on the absorption of the iodine-starch blue compound at 585nm;

• Performance testing results indicated that the WYD Checker is a highly precise, accurate, and sensitive tool for measuring salt iodine content;

• It is a user-friendly instrument that is based on a simple methodology and straightforward salt sample preparation and testing procedure;
WYD overview cont.....

• WYD machine can operate on 220V AC voltage or DC 9V, which requires six AA batteries. Thus, it can be used outside (in the field);
• Two reagents are required for the operation of the machine:
  • **Solution A**: Starch-based solution;
  • **Solution B**: Sulfuric acid solution;
• These solutions should be prepared in the lab and can be stored for several months in the refrigerator at 4 to 8 C.
WYD overview cont....

- Items required for assay of iodine in salt by WYD
- Two 50 ml Volumetric flasks with lids,
- Two 500ml Conical flasks with lids,
- Two semi-automated 5.0 ml Pipettes,
- Several pipette tips,
- Large volume of distilled water (bottle water),
- One water bottle for distilled water
- Solution A
- Solution B
Preparation of Salt solution for analysis using WYD:

1. Take 2 clean 50ml conical flasks with screw caps and label each of them clearly (flask_1 and flask_2);

2. Fill the small plastic spoon provided with salt (1.0g of salt) and put in the 50.0 ml Conical flask_1;
   • (NB: The salt must be properly mixed before taking it with the plastic spoon);

3. Add 10.0ml of distilled water (or bottle water) into the conical flask_1 containing the salt
   • (NB: do not use tap water);

4. Mix the solution to dissolve the salt (ensure that the salt is completely dissolved),
Preparation of Salt solution for analysis using WYD: cont

5. Use the pipette to take 2.0 ml of **Solution A** and pour it into the conical flask_1;
   • Shack the flask_1 gently to mix the solution;

6. Use another pipette to take 2.0 ml of **Solution B** and pour it into the same flask_1;

7. Close flask_1 with the screw cap and shake the flask_1 to mix the solution properly;

8. Pour the solution in conical flask_1 into a clean 50.0ml volumetric flask;

9. Add enough distilled water or bottle water to make the volume up to 50.0 ml;
10. Shake the volumetric flask properly to mix the solution thoroughly so as to obtain a uniform solution;

11. Pour the solution back into conical flask_1 and close the flask with the screw cap;

12. REPEAT Steps 2 to 11 for conical flask_2;
CALIBRATION OF ZERO POINT IN WYD CHECKER MACHINE

• Open the lid of the cuvette compartment in WYD machine, insert the cuvette containing distilled water then close the lid;

• Press the Auto-calibration Key (key O), the reading 0.0 should appear on the screen;
  • (NB: if the reading 0.0 does not appear use up/down key to set the zero);

• Open the lid and remove the cuvette with water, then close the lid; drain the water from the cuvette;
CALIBRATION OF WYD CHECKER MACHINE USING GREY GLASS

• Open lid of the cuvette compartment in WYD machine, insert Grey Glass and close the lid;
• Record the value shown on the screen;
  • NB: Expected value on the screen should be $50 \pm 0.5$. However, the value will be predetermined in the Micronutrient lab from the Internal Quality Control (QC) procedure. Levy-Jenny’s chart and Westgard Rules will be used to monitor the value of the Grey Glass shown on the screen.
• WYD machine will be considered calibrated and ready for use if the value of the Grey Glass on the screen is within the permissible limits of the Westgard Rules;
DETERMINATION OF IODINE CONTENT IN SALT SAMPLE

• Pour the salt solution in **Point 10** obtained for conical flask_1 above into the cuvette,
• Open the lid of the cuvette compartment in the WYD machine,
• Insert the cuvette containing the solution from conical flask_1 and close the lid;
• Record the reading on the screen.
• This is equal to Iodine content (mg/kg or ppm) in the salt sample in conical flask_1.
Determination of iodine content in salt sample; cont...

- Repeat the steps above for the solution in conical flask_2;
- Enter both results obtained in flask_1 and flask_2 in the appropriate section in salt questionnaire;
- This gives the results for salt sample in duplicate
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