Sorbic Acid Characterization - Notes

Project: Innoculant
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Aim:

To determine the concentration of Sorbic acid before and after treatment with Sulphur Dioxide.

Principle:

Sorbic acid is extracted from the sample using the solvent mixture of diethyl ether and petroleum ether (1:1) and absorbance of the extract is measured at 250nm. Sorbic acid in another aliquot is destroyed with Sulphur Dioxide and absence of the peak at 250 nm is taken as confirmation of the presence of sorbic acid in the sample.

Apparatus:

1. UV Spectrophotometer

Reagents:

1. **Mixed ethers (40-60):** Petroleum ether and anhydrous diethyl ether (1+1).
2. **Potassium permanganate solution:** Dissolve 15 gm in 100 ml water.
3. **Sorbic acid standard solution (1 mg/ml):** Dissolve 100mg and makeup to 100 ml with mixed ethers.
4. **Woking standard solution**: Dilute 5ml of sorbic acid standard solution to 100ml with the solvent.
5. **Reference solution:** Shake 10 ml of mixed ethers with 100 ml of phosphoric acid solution and dry the supernatant ether layer with anhydrous sodium sulphate.

Procedure:

1. Homogenise the sample.
2. Accurately weigh about 10gm of the prepared sample, in a high speed blender, add enough phosphoric acid to yield a total of 100ml of liquid in the mixture.
3. Blend for one minute and immediately filter through Whatman No.3 paper.
4. Transfer 10 ml of filtrate to a 250 ml separator containing 100ml of mixed ethers and shake for one minute.
5. Discard the aqueous layer and dry the ether extract over 5gm of anhydrous sodium sulphate and read the absorbance at 250nm against reference solution.
6. Determine the concentration of sorbic acid from the standard curve prepared as follows:

Table1

	A	B	C	D	E	F
1	Sample No	Working standard solution (in mL)	Mixed Ethers (in mL)	Filtrate Volume (in mL)	Volume of Phosphoric Acid (in mL)	Total Volume (in mL)
2	Reference or Blank	0	10	0	90	100
3	Sample	0	90	10	0	100
4	1	1	99	0	0	100
5	2	2	98	0	0	100
6	3	4	96	0	0	100
7	4	6	94	0	0	100

The final result may be expressed in ppm:

% sorbic acid = (mg sorbic acid / gm sample) × (1 / 1000) ×100