Determination of total phenolic acid content according to the Polish Pharmacopoeia VI (2002)

Reagents:

- **Hydrochloric acid 18 g/l**
- **Sodium hydroxide 40 g/l**
- **Arnov's reagent**
  dissolve 10 g of sodium molybdate and 10 g of sodium nitrite in 100 ml of distilled water

sample		
m - sample mass g		
k - caffeic acid coefficient		
A - absorbance @ 490 nm	a	
	b	
	mean	

$$X = \frac{A * k}{m}$$

result	

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The total content of phenolic acids in raw material is determined spectrophotometrically after water extraction. The result is calculated for caffeic acid ($C_9H_7O_4$).

Sample preparation

1 Put 1g of fine powdered (sieve 0,315 mm) raw material to 100 ml conical flask with fitting plug, pour 25 ml of water and shake mechanically for 30 min.

2 Filter extract to the 50 ml volumetric flask using cotton wool. Put the cotton wool with the raw material residue again to the conical flask, pour 25 ml of water and shake mechanically for 30 min again.

3 Filter extract to the 50 ml volumetric flask (that contains previous portion of extract) using cotton wool and fill up with water to the mark. Stir well.

Reference solution preparation

To a 10 ml volumetric flask pour (in this order!) 5 ml of water, 1 ml of hydrochloric acid (18 g/l), 1 ml of Arnov's reagent, 1 ml of sodium hydroxide (40 g/l) and fill up with water to the mark. Stir well.
Measure the absorbance at 490 nm and set as zero.

Working solutions preparation

To a 10 ml volumetric flask pour (in this order!) 5 ml of water, **1.0 ml of prepared extract**, 1 ml of hydrochloric acid (18 g/l), 1 ml of Arnov's reagent, 1 ml of sodium hydroxide (40 g/l) and fill up with water to the mark. Stir well.

Measure the absorbance at 490 nm **immediately**!

Result

Compute the total phenolic acid content (X; %):

$$X = \frac{A * k}{m}$$

A - absorbance
k - caffeic acid coefficient = 1.7544
m - mass of raw material [g]

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