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**Instant tea in solid form - Determination of catechins
content**

固态速溶茶 儿茶素类含量的检测方法

(ISO 14502-2:2005, Determination of substances characteristic of green and
black tea - Part 2: Content of catechins in green tea - Method using high-
performance liquid chromatography, MOD)

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Instant tea in solid form - Determination of catechins content

1 Scope

This Standard specifies the determination of catechins content in instant tea in solid form by high-performance liquid chromatography (HPLC).

This Standard applies to the determination of catechins content in instant tea in solid form.

2 Normative references

The terms in the following documents become the terms of this Standard by reference to this Standard. For dated references, all subsequent amendments (not including errata content) or revisions do not apply to this standard. However, parties to agreements that are based on this Standard are encouraged to study whether the latest versions of these documents can be used. For undated references, the latest edition applies to this Standard.

GB/T 18798.1, Instant tea in solid form - Part 1: Sampling (GB/T 18798.1-2002, eqv ISO 7516:1984)

GB/T 18798.3, Instant tea in solid form - Part 3: Determination of moisture content (GB/T 18798.3-2002, eqv ISO 7513:1990)

3 Principle

Instant teas are dissolved in hot water with 10% acetonitrile. The catechins are determined by HPLC on a C₁₈ column using gradient elution with UV detection at 278 nm. External standards of catechin standards are used for quantitation directly; alternatively, caffeine may be used as a standard in conjunction with individual catechin Relative Response Factors (RRF_{Std}) established by an ISO international interlaboratory test (see 7.2).

4 Apparatus

4.1 Analytical balance: sensitivity of 0.000 1 g.

4.2 Water bath.

5.9.2 Gallic acid (GA) stock standard solution: 0.100 mg/mL.

5.9.3 Catechin stock standard solutions: +C 1.00 mg/mL, +EC 1.00 mg/mL, +EGC 2.00 mg/mL, +EGCG 2.00 mg/mL, +ECG 2.00 mg/mL.

5.10 Standard working solution: use the stabilizing solution (5.7) to prepare.

Concentrations of standard working solutions: gallic acid 5 µg/mL ~ 25 µg/mL, caffeine 50 µg/mL ~ 150 µg/mL, +C 50 µg/mL ~ 150 µg/mL, +EC 50 µg/mL ~ 150 µg/mL, +EGC 100 µg/mL ~ 300 µg/mL, +EGCG 100 µg/mL ~ 400 µg/mL, +ECG 50 µg/mL ~ 200 µg/mL.

6 Operating methods

6.1 Sampling

In accordance with the provisions of GB/T 18798.1.

6.2 Determination steps

6.2.1 Determination of dry matter content

In accordance with the provisions of GB/T 18798.3.

6.2.2 Preparation of test solution

Weigh 0.5 g (accurate to 0.000 1 g) of uniform instant tea into a 50 mL volumetric flask; add water of ≤60 °C to dissolve; add 5 mL of acetonitrile (5.1); use water to dilute to the mark; shake well. Use a pipette to transfer 2 mL of the above extraction solution to a 10 mL volumetric flask; use the stabilizing solution (5.7) to dilute to the mark; shake well; pass through a 0.45 µm membrane, for later measurement.

6.2.3 Chromatographic conditions

Mobile phase flow rate: 1 mL/min.

Column temperature: 35 °C.

Ultraviolet detector: $\lambda = 278$ nm.

Gradient conditions: Keep at 100% phase A for 10 min

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From 100% phase A → 68% phase A, 32% phase B within 15 min

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