

Analytical Proposal for Epigallocatechin-3-gallate

Epigallocatechin-3-gallate is the ester of epigallocatechin and gallic acid.

Typically plant-derived, some products contain very substantial levels of it.

Epigallocatechin gallate (EGCG) is found at high concentrations:

- in dried green tea leaves (7380 mg /100 g)
- in dried white tea leaves (4245 mg /100 g).

It is also present in smaller quantities in black tea (936 mg per 100 g). This is because, during tea fermentation, catechins are mostly converted into theaflavins and thearubigins by certain polyphenol oxidase-type enzymes.



Traces of epigallocatechin-3-gallate are also found in some fruits, more specifically in:

- apple and plum skins,
- onions,
- hazelnuts,
- pecan nuts,
- carob powder (109 mg per 100 g).

Chemically speaking, it is a type of catechin although, nutritionally speaking, it is better known as a polyphenol.

Polyphenols are substances with biochemical antioxidant properties, that is to say capable of protecting cells from damage caused by free radicals.

This substance is said to benefit the nervous and cardiovascular systems and also accelerates the metabolism of fats and sugars, making it easier to lose weight.

Supplements based on epigallocatechin gallate are recommended for improving body composition and, more specifically, slimming.

Epigallocatechin gallate from green tea falls under the Ministry of Health document “Other nutrients and other substances with a nutritional or physiological effect” and specifically under the list “Substances with a defined maximum daily intake”.

An EU regulation limits the amount of green tea extract containing epigallocatechin gallate (EGCG) that can be present in food and sets new labelling requirements.

Underlying this decision are health concerns related to EGCG, in particular potential liver damage.

The EU Regulation 2022/2340 of 30/11/2022 (annex) provides the following new restrictions for foodstuffs containing green tea extracts containing (-)-epigallocatechin-3-gallate:

- the daily portion of food must contain less than 800 mg of (-)-epigallocatechin-3-gallate;
- the label must state the maximum number of food portions per daily intake and a warning not to consume 800 mg or more of (-)-epigallocatechin-3-gallate per day, specify the (-)-epigallocatechin-3-gallate content per food portion and include the following warnings:
 - "It should not be consumed if other products containing green tea are consumed on the same day";
 - "It should not be consumed by pregnant or breastfeeding women and under-18s";
 - "It must not be consumed on an empty stomach".

The new legislation also provides for the inclusion of green tea extracts containing EGCG among the substances under surveillance by the European Community (i.e. in Part C of Annex III of Regulation (EC) No. 1925/2006). This means that the companies concerned will have 24 months from 22 December 2022 to provide data on the safety of these preparations.

Regarding green tea infusions, instant drinks, and ready-to-drink green tea beverages, EFSA experts concluded that they can be considered normally safe.

NEOTRON PROPOSAL:

Neutron performs the analysis of epigallocatechin-3-gallate using the HPLC-DAD technique. The method is accredited both for the supplement matrix and for the tea matrix with a limit of quantification of 25 ppm for the first one, while for the second one, which always has high contents, a target LQ of 1000 ppm has been chosen. The technique allows the identification of the molecule by discriminating it from other catechins (which can still be quantified) and possible matrix interferences.

Contact us for more information or to receive a dedicated proposal.

References:

1. 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”.
2. Regulation (EU) 2022/2340 amending Annex III to Regulation (EC) no. 1925/2006 as regards green tea extracts containing (-)-epigallocatechin-3-gallate (EGCG).

Neutron, part of the Cotecna Group, is a global player in analytical services on food and feed products, supplements, materials in contact with food (FCM), cosmetics, and pharmaceutical products.



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