# Phenolic hydroxyl groups can store energy

How do phenolic compounds affect antioxidant activity?
The structure of phenolic compounds is related to their radical-scavenging and metal-chelating activity. The number of hydroxyl groups and their position in relation to the carboxyl functional groupinfluences the antioxidant activity of phenolic compounds (Balasundram et al.,2006).

Do dihydroxy phenolic acids have a higher antioxidant activity?
In this study,dihydroxy phenolic acids (3,4-DH) had a higher antioxidant activitythan other phenolic acids with corresponding carboxylic acid groups in FRAP and DPPH assays apart from 4-H-3,5-DM-B/C/P. In general,both phenolic hydroxyl and methoxy groups significantly enhance the antioxidant activity of phenolic acids.

How are phenolic hydroxyl groups related to free radical scavenging ability?
In phenolic acids the number and position of phenolic hydroxyl groups are directlyrelated to the free radical scavenging ability 11. When the number of phenolic hydroxyl groups on the benzene ring is less than 4,the antioxidant activity of phenolic acids is proportional to the number of phenolic hydroxyl groups 10.

Why do phenolic compounds possess ideal structure chemistry for free radical scavenging?
Phenolic compounds possess ideal structure chemistry for free radical scavenging activities because they have: (1) phenolic hydroxyl groupsthat are prone to donate a hydrogen atom or an electron to a free radical; (2) extended conjugated aromatic system to delocalize an unpaired electron.

Why is phenolic hydroxyl a nucleophile?
In the context of acid anhydrides,the phenolic hydroxyl group can act as a nucleophile,attacking the carbonyl carbon and displacing the leaving group. The aromatic nature of the phenyl ring in the phenolic hydroxyl group contributes to the stability and reactivity of the compound.

What are phenolic compounds?
Conclusion and Future Perspectives Phenolic compounds are widely found in plant food,they are classified in a range of groups according to their structure. Such variations give them diverse characteristics,one of which is antioxidant activity that is linked to the molecular structure of phenolic compounds.

In terms of properties, phenolic compounds often display antioxidant behavior. This is due to the ability of the -OH group to donate an electron, which can mitigate oxidative stress in biological ...

The presence of electron-withdrawing groups at the ortho and para positions to phenolic hydroxyl groups was found to enhance antioxidant activity. An increase in the number of phenolic ...

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In this paper, the initial stage of the pyrolysis process of phenolic resin has been simulated by ReaxFF (reactive force field) molecular dynamics simulation under various ...

This might also create a localized high-polarity microenvironment, which could accelerate the hydrogen supply process of phenolic hydroxyl groups, reduce the BDE of ...

Lignin, an abundant source of polyphenolic compounds, is often overlooked despite its chemical structure containing numerous phenolic hydroxyl groups that can ...

The transition to a renewable energy future requires the development of sustainable chemicals and fuel refining technologies. Lignin, as the only renewable aromatic ...

In order to obtain a highly chemical-crosslinked network, lignin was phenolated to increase its phenolic hydroxyl groups [79] or enzymatic hydrolysis was chosen as the starting ...

Obviously, there are some discrepancies on the relationship between phenolic hydroxyl and EMC, and the dewatering energy of brown coal due to different oxygen functional ...

Phenolic compounds are the most abundant antioxidants in the human diet. They have a considerable structural diversity, characterized by the hydroxyl groups on aromatic ...

Abstract Phenolic hydroxyl modified hyper-crosslinked polymers were synthesized according to two consecutive Friedel-Crafts reactions. The first Friedel-Crafts reaction grafted ...

Phenolic hydroxyl groups are functional groups found in phenolic compounds that play a crucial role in various chemical reactions, including acylation and alkylation. These ...

Abstract Phenolic compounds are the most abundant antioxidants in the human diet. They have a considerable structural diversity, characterized by the hydroxyl groups on ...

It is well-accepted that aromatics substituted by phenolic hydroxyl (Ar-OH) and carboxyl (-COOH) groups are primary constituents of HA. In this research, we proved that five ...

The o-phenolic hydroxyl groups are the key functional groups in gallotannins, which possess a much stronger tendency to coordinate with tetrahedral Ge (IV) compared with ...

Inspired by the importance of the phenolic group to the electron transporting property of hole transport materials, phenolic hydroxyl groups were introduced in lignosulfonate ...

At the same time, in aqueous environments the phenolic hydroxyl groups of polyphenols can become ionized

and interact with positively charged amino acids, thereby ...

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