Phenolic hydroxyl groups can store energy

Do phenolic acids promote antioxidant activities?
th -COOH. Methoxyl (-ocH3) and phenolic hydroxyl (-oH) groups can also promote the antioxidant activities of phenolic acids. These results relate to the O-H bond dissociation enthalpy of the phenolic hydroxyl group in phenolic acids and the alues of proton afinity and electron transfer enthalpy (ETE) involved in the electron donation ability o

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.

Which group promotes antioxidant activities of phenolic acids?
Based on the same substituents on the benzene ring,-CH 2 COOH and -CH = CHCOOH can enhance the antioxidant activities of phenolic acids,compared with -COOH. Methoxyl (-OCH 3) and phenolic hydroxyl(-OH) groups can also promote the antioxidant activities of phenolic acids.

Do phenolic compounds scavenge free radicals?
The number of hydroxyl groups and their position in relation to the carboxyl functional group influences the antioxidant activity of phenolic compounds (Balasundram et al., 2006). The abilities of the phenolic compounds to scavenge free radicals can be assessed for a range of assays.

How do phenolic compounds differ in their antioxidant potential?
The number and position of hydroxyl groupin a particular phenolic compound leads to the variation in their antioxidant potential. Polyphenols are the main source of dietary antioxidants,and are effortlessly absorbed in the intestine.

Why do phenolic compounds have more hydroxyl groups?
The hydroxyl group in a phenolic compound is responsible for the formation of intermolecular hydrogen bonding. Thus,more hydroxyl group means more hydrogen bonding and thus more solubility. For example,the solubility of catechol is significantly higher (430 g/L) than a simple phenol.

Methoxyl (-OCH 3) and phenolic hydroxyl (-OH) groups can also promote the antioxidant activities of phenolic acids. These results relate to the O-H bond dissociation enthalpy of the phenolic hydroxyl group in phenolic acids and the values of proton affinity and electron transfer enthalpy (ETE) involved in the electron donation ability of ...

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The antioxidant activity of natural flavonoids is primarily exerted by phenolic hydroxyl groups; however, C-H bonds also contribute to these properties. In this study, the contributions of phenolic groups and C-H bonds to the antioxidant properties of 13 flavonoids were investigated by using the (RO)B3LYP/6-311++G(2df,2p)//B3LYP/6-311G(d,p ...

The phenolic compounds with hydroxyl groups showed intramolecular hydrogen bonding with the adjacent methoxyl group (Kubo and Kadla 2005). In conclusion, intermolecular hydrogen bonding between biphenol and phenolic moieties, have a significant contribution to the thermal mobility of lignin.

Sulfation and glucuronidation occurs at reducing hydroxyl group of phenolic acids so decreases their antioxidant activity. There are too much data available for biological activities of phenolic acids but very less is reported for their metabolites except for the metabolites of caffeic and ferulic acids [[49], [50], [51]].

Some studies indicate that in alternation with the hydroxyl group O-methyl can reduce the antioxidant capacity of the phenolic substance (Silva et al., 2000). There is still a discrepancy in SAR for phenolic antioxidant activity, requiring further investigations for later application and better utilization.

Anthocyanins can quench reactive radical species by single electron transfer reaction and through hydrogen atom abstraction from phenolic groups. As shown in Figure 5, positions 3´ and 4´ are fundamental for the antioxidant capacity of these compounds.

The excellent energy densities of PHRGs can be attributed to their large specific surface areas, good pore structures and the presence of copious phenolic hydroxyl groups and other heteroatom functional groups on their surface, which greatly improve the EDLC capacitance and pseudocapacitance of PHRGs sample, thereby improving their energy ...

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