

General Phenolic Methods

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Phenolic compounds undergo characteristic reactions due to the chemistry of the phenolic functional group. Among the most useful of these reactions for analytical purposes is the tendency for the phenolic group to be oxidized. If oxidation is coupled to reduction of an appropriate reagent then quantitative analysis is achieved. Widely used methods based on redox chemistry include the Prussian blue method and the Folin method (Swain, T. & Hillis, W.E. J. *Sci. Food Agric.* 1959, 10, 63).

Other general phenolic methods are based on formation of colored phenolic-metal ion complexes, but these methods are not recommended (Hagerman, Zhao & Johnson, 1997).

Differences in the redox potential and stoichiometry for different phenolics leads to differential responses with redox assays. Although these assays are often standardized with simple phenolics such as gallic acid, complex polyphenolics may have a very different response on a molar or mass basis than the simple standard. Thus the results must be expressed as "gallic acid equivalents" rather than as absolute weight percent.

General phenolic methods can be useful for screening plants for the presence of phenolics. Use of the more selective functional group methods and of methods used to assess biological activity is strongly recommended.