

Colorimetric determination of amino acids using the genipin from *Gardenia Jasminoides*

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Blue pigments are formed by the reaction of amino acids with genipin, a hydrolysate of geniposide from gardenia fruit. The colorimetric detection of amino acids using the genipin reaction was evaluated and compared to the well-known ninhydrin reaction. The molar extinction coefficients of the blue pigment resulting from the reactions of genipin with various amino acids and secondary amino acid (proline) were higher than those of the ninhydrin reaction products. When the amino acid asparagine reacted with genipin, the coefficient was about fourteen times higher than with ninhydrin. Thin layer chromatographic analysis showed that the genipin reaction is more vivid and stable than the ninhydrin reaction except the colorization process takes longer. After 24 h at room temperature, almost all the blue-colored ninhydrin reaction products had disappeared, however genipin reaction products remained unchanged. The addition of 0.1 mM Cu^{2+} and Fe^{3+} reduced the absorbance of Gly-ninhydrine

reaction by 50 % and 98 % while those of Gly-genipine reaction were essentially unchanged. In conclusion, genipin reaction is safer, produces higher molar extinction coefficients, and has greater color stability than ninhydrin. It seems the genipin is a very useful reagent for quantitative analysis as well as for qualitative detection of amino acids.