Fruits and vegetables have become important in healthy nutrition due to the content of phenolic compounds which are natural antioxidants, they protect the body against free radical-mediated toxicities. In this study, fifty grape must samples produced from the red grapes belonging to Isparta and Burdur (Turkey) region were collected. Chemical and physical properties, total phenolic content, antioxidant activity using ORAC and TEAC assay and quantification of phenolic compounds were determined in grape must samples. Data were analyzed by SPSS for Windows (version 17.0, SPSS Inc.). All tests were two-sided and the probability values less than 0.05 (P<0.05) were considered statistically significant. Total solids, water soluble solids, titratable acidity and pH were 47.66- 79.37%, 53-76%, 0.17- 1.29% and 4.12-6.09, respectively. Oxygen radical absorbance capacity and Trolox equal antioxidant activity were 13.51-95.44 μmol/mL and 3.58-33.28 mM, respectively. Mean total phenolic content of grape must samples was 6145 mg GAE/L. Grape must had polyphenolic content of gallic acid, chlorogenic acid, caffeic acid, syringic acid, p-coumaric acid, ferulic acid, luteolin and apigenin. Gallic acid and luteolin content of samples were high than chlorogenic, caffeic, syringic, p-coumaric, ferulic acid and apigenin. There was a significant correlation between acidity and syringic acid, luteolin, apigenin (P<0.01) and chlorogenic acid. Besides the nutrition value, grape must has some significant functional properties due to high antioxidant activity. There is significant correlation between gallic acid, chlorogenic acid, caffeic acid, syringic acid, p-coumaric acid, ferulic acid and TEAC results. Chlorogenic acid and luteolin have a greater effect on antioxidant activity than other fenolics by ORAC assay. Apigenin was not in any correlation with both of assays.