In this study, two different treatments and their effects on quality characteristics of chicken nuggets after three different cooking procedures were evaluated. Batters containing grape seed powder (GSP) dipped into whey protein solution (WPS) were compared with control (without any treatment) using deep fat frying, conventional oven and microwave oven. Batters contained equal amounts of wheat and corn flours with 5 and 10% GSP. All batters exhibited thixotropic behavior, and the GSP enhanced batters had lower viscosities. The lowest pickup values and highest total color change (ΔE) values were observed in deep fat fried samples. The microwaved samples had higher crispness levels and pickup values but achieved lighter colors that were identical to those of the pre-fried samples. Samples dipped into WPS provided reduced oil absorption consistent with their moisture contents. The scores for overall acceptability tended to decrease with the increase in GSP amount.