Chinese water chestnut (Eleocharis dulcis Trin.) is one of the popular ingredients in various Asian cooking, primarily as the peeled corms. Further, flour and starch prepared from the corms are used in some dishes. In this study, the objective was proposed to investigate chemical composition and some physicochemical properties of Chinese water chestnut flour and starch. Three sizes of flour (60, 80, and 100 mesh) starch and residual starch were investigated chemical composition compared with fresh Chinese water chestnut and studied physicochemical properties such as size and shape of starch granule by scanning electron microscope (SEM), pH, color (L*, a*, and b*) by Hunter lab digital color difference meter, water absorption index and water solubility index, swelling power and solubility, Thermodynamic properties by Differential Scanning Calorimeter, pasting behavior by Rapid Visco Analyzer (RVA) and Brabender amylograph. Finally, calculated yield and cost of flour and starch production.

The results found that flour and starch from Chinese water chestnut contained highly amylose, especially, starch (41.00 %) and 100 mesh flour (32.75 %). While, residual starch contained highly total dietary fiber (40.11%). The SEM showed that starch granules have oval shape and size range between 5 and 17 μm. The pH of flour and starch were 5.16 – 6.47. Color value showed that flour and starch had light yellow and larger size of flour had less white color (L*) than smaller size but water absorption index and swelling power were better. While swelling power and solubility of flour and starch solution were increased with temperature. In addition, the flour and starch that had higher starch composition required more energy for gelatinization than lower starch. The rheological characteristics were presented that starch had lower gelatinization temperature than flour, but more stable of starch gel while cooling. Finally, yield of flour and starch production were rather low while the cost of production was rather high (203.42 – 327.13 bath/kg product).

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