

## Physical characterization of activated carbon derived from mangosteen peel

### ABSTRACT

Mangosteen fruits have gained some great attention in fruit juice industry and the solid generated could be use as potential source for activated carbon production. In order to determine the potential of using mangosteen husk, the raw mangosteen peel was subjected to ultimate, proximate, biopolymer and thermogravimetric analysis. Furthermore, activated carbon derived from mangosteen peel was prepared by impregnating the sample with different phosphoric acid concentration (10, 20, 30 and 50 %) for 24 h with heating rate of 5 min together with activation duration for 20 min until the desired temperature 850 °C with presence of flushing of nitrogen gas. The sample was characterized by using micrometric ASAP 2010. The results revealed that acid concentration affect the surface area, yield of activated carbon and pore structures. The highest surface area with high micropore volume was obtained at 30 % acid concentration with 731 m<sup>2</sup> g<sup>-1</sup> and 0.33 cm<sup>3</sup> g<sup>-1</sup> respectively.

**Keyword:** Activated carbon; BET surface area; Mangosteen husk; Phosphoric acid