

## **Hydration properties of palm kernel cake**

### **Abstract**

The hydration properties of palm kernel cake (PKC) were investigated for the bioconversion of PKC to poultry feed via solid state fermentation. At room temperature, the swelling capacity of PKC was found to be constant and unaffected by different particle sizes, while the water retention capacity was affected by different particle sizes. PKC swelling was affected by moisture content and particle size. Swelling was linearly proportional to moisture content (MC). Maximum swelling at room temperature was achieved by 2.675 mm PKC for 50% MC and above, with the final volume to initial volume ( $V_f/V_i$ ) ratio up to 1.71 at 210% MC. For 50% MC and below, maximum swelling was achieved by 1.500 mm PKC, with the  $V_f/V_i$  ratio up to 1.29 at 50% MC. At a constant particle size of 1.500 mm, increasing temperature increased the rate of PKC swelling, but the effect of temperature on the  $V_f/V_i$  ratio was significantly minimal at different moisture content and temperature. Mathematical expressions for the swelling of PKC at room temperature with different particle sizes, and 1.500 mm PKC at different temperatures, were developed in relations to initial volume, final volume, and moisture content. © 2008 Elsevier Ltd. All rights reserved.