

**Utilization of Pretreated Peanut Hulls for The Optimized Bioproduction
of Cellulase by *Pycnoporus Sanguineus*
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ABSTRACT

Thailand is an agricultural country, producing tons of agricultural waste (rice straw, corncobs, coconut husk, sugarcane bagasse, cassava peel, and peanut hulls). Instead of eliminating, these biomasses can be converted to a value-added product, cellulase enzyme for industrial sector. Peanut hulls are one of excellent sources for cellulose, which can be used as a carbon source for microbial cellulase production. This study is conducted by experimental design using pretreated peanut hulls as a substrate via solid-state fermentation (SSF) by white-rot fungus, *Pycnoporus sanguineus*. The three treatments: (1) initial moisture in solid substrate (60%, 70%, 80%, and 90%), (2) temperature (25°C, 30°C, and 37°C), and (3) initial pH value (5.0, 5.5, 6.0, 6.5, and 7.0) on cellulase production in 3–12 days of incubation were observed in flask fermentors. The highest productions were obtained on the 9th day of incubation at 70% initial moisture, 30°C, and initial pH 6.0. The enzyme activities of filter paper activity (FPase), carboxymethyl cellulase (CMCase) and cellobiase were 4.437±0.148, 11.433±0.144 and 0.890±0.087 unit per gram dry substrate (U/gds) respectively. These results supported that the cellulase production by *P. sanguineus* under SSF using pretreated peanut hulls as a substrate could be an alternative choice for commercial cellulase production.