

Phenolic Compounds Production, Enhancement and Its Antioxidant Activity of Blue Berry Powder with *Bacillus subtilis* Light Mediated Fermentation Compounds

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Light fermentation has been conducted under different light conditions such as normal dark light, white light, and light emitting diodes (LEDs) various color (blue, green, red, white on blueberry powder with fermenting bacteria *Bacillus subtilis* (B2). The bacteria B2 was isolated and identified by 16S rRNA sequencing method. RYRP biologically converted to secondary metabolites through light fermentation in the presence of *Bacillus subtilis*, the bacteria actively involved in bioconversion process. LEDs fermentation to enhance the production of phenolic content while comparing to normal dark and white light. Among the different color LEDs, blue LEDs mediated fermentation showed higher amount of total phenolic and flavonoid content. Then blue LEDs mediated fermented compound were characterized by FTIR and GC-MS, subsequently the compound was analyzed antioxidant activity tests and the antioxidant activity exhibited higher. This is the first study to demonstrate that *B. subtilis*-LEDs mediated fermentation is useful for facilitating phenolic compound production and enhancing antioxidant activity, which may have greater application fermentation fields.

Key words: LED light, *Bacillus subtilis*, Phenolic compounds, Antioxidant, Photo-fermentation

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