

## **ABSTRACT**

*Indonesia has many natural resources, but not all are well utilized, including thermophilic bacteria, which have not been fully explored. Thermophilic bacteria live in a location with a temperature of 45°C to 70°C, such as hot springs or volcanic craters. Thermophilic, high temperature resistant bacteria are very efficient in producing enzymes and can also be cultivated quickly and in large quantities with high stability at high temperatures. Thermophilic bacteria have the potential in the production of thermophilic enzymes that are able to stabilize against hot temperatures. Generally, enzymes will be damaged against high temperatures. Enzyme isolation from thermophilic bacteria is very useful in various fields such as in the industry, which is almost entirely in the process using high temperatures. These enzymes have many advantages because they can increase the reaction so as to save production costs, energy and time in the industrial process. Thermophilic bacteria are found in many places such as areas with volcanic activity and also hot springs. Result, it can be concluded that UTMSBA and UTMSBS isolates showed positive results in the gelatin hydrolysis test, while the citrate test, catalase test, sulfide hydrolysis, gelatin hydrolysis, and mortality test showed negative results. In terms of the shape, the edges and elevations of UTMSBA and UTMSBS isolates appear circular, entire, and flat. Similarly, the isolates can hydrolyze amylase, cellulase, and protease enzymes and the results of the identification of the isolate with the 16S rRNA gene showed 99.99% homology, namely *Bacillus amyloliquefaciens* strain V4.*

**Keywords:** *Enzyme, Hotspring, Molecular identification*