

## ABSTRACT

**CELLULOLYTIC ANAEROB BACTERIA AS A BACTERIA  
INOCULUM OF CACAO PODS SILAGE (*Theobroma cacao*)****By : Fungsi Sri Rejeki**

This research, was based on the fact that rumen cellulolytic *anaerob* bacteria, especially of which is related to its function as a bacteria inoculum in ensilage process of cacao pods (*Theobroma cacao*), has not been yet deeply observed. The goals of the research were to isolate and select cellulolytic *anaerob* bacteria and use it as a bacteria inoculum to produce cacao pods silage.

This study was a laboratory research consisted of three phases, namely isolating, selecting and identifying cellulolytic *anaerob* bacteria, preparing the bacteria inoculum, and testing the cacao pods silage resulted from the use of the bacteria inoculum.

The first phase of the research was done to acquire two pure isolate bacteria from rumen fluid, cellulolytic *anaerob* bacteria and *Lactic acid anaerob* bacteria. The second phase was to observe the optimal growing condition of cellulolytic bacteria *anaerob* and *Lactic acid anaerob* bacteria in preparing bacteria inoculum. The third phase was to notice the physical, chemical and biological quality of cacao pods silage.

The acquired isolated *Lactic acid anaerob* bacteria belongs to the species of *Lactobacillus sp* which nature was gram (+) in the form of short cells in chain. The optimal incubation period of *Lactobacillus sp* to produce lactic acid with MRS medium at 37<sup>o</sup> C was 18 hours, resulting 1.6906 mg/ml of lactic acid. The acquired isolated cellulolytic *anaerob* bacteria belongs to the species of *Bacillus sp* which nature was gram (+) in the form of long cells. The incubation period of *Bacillus sp* with the highest activity of CMC-ase enzyme was 3 days, in which the CMC-ase enzyme activity was 13.0135 AU/ml.

The use of bacteria inoculum *Lactobacillus sp* and *Bacillus sp* in the ensilage process reduces pH and increases the content of lactic acid in the produced cacao pods silage. The test result of the *in vitro* digestibility of cacao pods silage represents no different value between organic and dry matter, however there was an increasing value in the *in vitro* digestibility of crude fibres.

Key words : cellulolytic *anaerob* bacteria – cacao pods - silage