oven , desiccator, Ohause scale, vochdoss, klem, Kjedahl bulb, a set of soxhlet extractor, silica disc, burette, Erlenmeyer glass, separating funnel, *Nasional* blender, *Retsch Mixer* vortex, magnetic stirrer, *Katterman* shaker, furnace and Cabinet dryer, *Rinnai* gas stove and gas cylinder, plastic tray, plastic bag and stirrer.

Research steps: a) making medium culture consisted of 0,3 g *bacto beef* agar; 1,5 g *bacto agar*; 0,5 g NaCl; 2,1 g glukosa; 100 ml distilled water, in which sterilization was done using autoclave at 121°C for 15 minutes to separate glucose from other components. b) Making yeast multiplication medium: All chemicals namely 1,3 g $KH_2PO_4.12H_2O$; 1,3 g $MgSO_4.7H_2O$ $1,0KH_2PO_4.12H_2O$; 1,0 g $MgSO_4.7H_2O$; 0,01 g $FeSO_4.7H_2O$; 0,01 g $CaCl_2.2H_2O$; 0,01 g MnSO4.$4H_2O$ and 5 g NH_4NO_3; 0,01 g $FeSO_4.7H_2O$; 0,01 g $CaCl_2.2H_2O$; 0,01 g MnSO4.$4H_2O$ and 5 g NH_4NO_3 were mixed with culture medium, added with aquadest to reach 1 liter volume, then added with 50g drops. Medium acidity was made pH=4. From 1000ml compound, 250ml was taken, added two tubes to lean it, then put to aerobe shaker for 24-48 hours. From 250ml compound, 10% (75ml) was taken then put into 750 liquid culture medium, and left for 24-48 hours. c) Palm kernel cake fermentation: sterilized palm kernel cake was divided into six parts, three for non-fermented PKC (control) and each from the other three was added with medium culture to obtain 60% moistness (the added liquid was figured out after obtaining PKC water content).

Mixing steps was conducted using laminar. PKC for fermentation was placed on plastic tray, covered with aluminum foil and aerated (by punching holes), then incubated in fermenter at 36 - 37 ^{o}C for 48 hours.

The measured variables were nutrient composition (crude protein, crude fiber, crude fat, ash, NFE, mannose) and fiber fraction (cellulose, hemicellulose and lignin). Proximate analysis with AOAC method was conducted to obtain nutrient content data, while fiber fraction analysis was subject to Chesoon method[16]. Mannose analysis was conducted in Biochemicals and Nutrition Laboratory PAU IPB. The obtained data were subject to t test [17].

3 Result And Discussion

3.1. Nutrient Composition

Chemical analysis result of palm kernel cake and the fermentation product showed that fermentation could increase nutritional value of palm kernel cake (Table 1). Crude protein value of fermented palm kernel cake was higher than that of non-fermented. Despite the high crude fiber, hemicellulose had increased, showing that half of crude fiber was hydrolysable into simpler compound named mannose.

Average dry matter of PKC was higher than that of FPKC, demonstrating that during fermentation, organic compound was degraded into simpler compound in which water was released. Microbial activity used carbohydrate as carbon source. Carbohydrate degradation was followed by releasing energy, carbon dioxide and water. The released heat caused increasing substrate temperature. All organisms need energy source for living, obtained from food metabolism within the organism ecosystem [18]. Accordingly, the energy source here was carbohydrate contained in palm kernel cake and nitrogen source was the supplemented urea.

TABLE 1
NUTRIENT COMPOSITION OF PALM KERNEL CAKE (PKC) AND FERMENTED PALM KERNEL CAKE (FPKC) (% DRY MATTER)

Parameter	Treatments		T-test
	PKC	FPKC	
Dry Matter	89.43	83.90	*
Crude Protein	22.18	26.07	*
Crude Fiber	37.43	37.84	ns
Crude Fat	9.13	8.89	ns
Ash	4.74	4.94	ns
NFE	15.82	6.36	*
Mannose	2.19	3.56	ns

Note: *Value bearing different superscript on the same line showed significant difference (P<0,05).
ns = not significan (P>0.05)

Fermentation on PKC triggered change in feed nutrition content. Crude protein FPKC (26,07%) seemed higher than that of PKC (22,18%). The increasing protein content in PKC was assumed to result from supplementation of inorganic N source (urea) and mineral into substrate and microbial activity that caused proper substrate degradation. During fermentation, protein hydrolysis occurred (although in minuscule around 4%) whose product was accumulated in peptide form which was eventually hydrolyzed into amino acids. Furthermore, protein was added up inside the microbial cell. Products during growth process, besides enzyme, were extracellular enzyme protein and protein from microbial metabolism that induced the increasing crude protein [19].

Crude fiber in fermentation product also increased, as assumed to result from microbial growth that required some food substance, among which was crude fiber as substrate. In line with Satiawiharja [20] on fermentation product, medium functioned as the source of carbon, nitrogen and energy. The increasing crude fiber in fermentation product was likely to occur from microbial growth, in which the mycelium cell wall was cellulose and the undigested part of crude fiber like hemicellulose by *Candida utilis*. Fermentation process caused degradation in certain enzymes against the indigestible materials, cellulose and hemicellulose for instance, into simple glucose. In this research, the process did not occur, and might require longer period [8].

PKC crude fat lowered from 9,13% into 8,92%, but statistical measurement showed that the decrease was not significant (P<0,05). During fermentation, lipolysis occurred due to the fat consumed by the leaven for its growth some catalysis reactions induced by lipase enzyme was hydrolysis, ester-synthesis and alcoholysis [21]. By lipase enzyme activity, fat content in fermentation product decreased. This occurrence was absence in this research, as assumed due to lack of incubation period. It was different from observation by [5] that fat content decreased in palm kernel cake substrate fermented using *Candida utilis*. The decreasing substrate with high fat content such as palm kernel cake showed that *Candida utilis*