



The First International Symposium on Food and Agro-biodiversity (ISFA2014)

In Vivo Study on Albumin and Total Protein in White Rat (*Rattus norvegicus*) after Feeding of Enteral Formula from Tempe and Local Food

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Abstract

Enteral nutrition is used to supply the needs of nutrition and supplement for malnutrition patient. In certain condition, enteral was given in liquid form. Local food, such as tempe, rice, mung bean and canna suitable for being used in enteral formula. This study was conducted to determine effect of feeding enteral nutrition from tempe and local food using in vivo study on body weight, albumin and total protein. Rats were divided into three groups : Groups A were fed gogik (dried cassava, negative control), group B were fed enteral nutrition from local food (tempe, rice, mung bean, canna) and group C were fed commercial enteral nutrition. Before feeding, all of rat were fed gogik (dried cassava) during 14 days. Enteral nutrition was fed 20 gr/day during 30 days and consumption was recorded every day. Whole blood was collected from sinus orbitalis for analysis of total protein and albumin. Observation on body weight, albumin and total protein were made on day 0, 15 and 30. The result showed that body weight and albumin group B (enteral nutrition from tempe and local food) and group C (commercial enteral nutrition) were increased and group A (negative control) was decreased. The highest weight gain was by group B. Total protein on group B (4,63 g/dl) was higher compared to group C (4,48 g/dl) and group A (1,19 g/dl). This result showed that enteral nutrition from tempe and local foods was better than commercial formula.

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Peer-review under responsibility of the organizing committee of Indonesian Food Technologist Community

Key words: in vivo, enteral nutrition, local food, body weight, total protein, albumin

Introduction

Malnutrition in hospital patients, especially in hospitalized patients was common nutritional problem. Various studies have shown that the high prevalence of malnutrition in

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hospitals not only in developing countries but also developed countries, Such as in the Netherlands 40%, Sweden 17% -47%, Denmark 28%, America and Britain 40% - 50% [1][2]. Prevalence of malnutrition in hospitals was increase and from the average nutritional status of patients who were hospitalized decreased 75% compared to the nutritional status nutritional status of the current hospital admission [3]. The incidence of hospital malnutrition was 40-55% with 12% of them with severe malnutrition [4]. The risk of malnutrition's affect were healing time will be longer, extending the length of hospitalization (hospitalization period of patients with malnutrition 90 times longer compared with patients with good nutrition), adds to hospital costs, and generally elevating patient morbidity and mortality [5][6].

Efforts were made to maintain and improve the nutritional status of patients with the adequate and optimal nutrition using enteral [7]. Enteral was given orally or by tube to the patiens as long as the gastrointestinal system still work properly. Study was conducted to develop enteral formula from local food, such as tempe, green beans, rice, and canna. Nutrition from this formula contain energy 401 cal; protein 16,32 %; fat 9,49 %; and mineral Ca, mg, Na, K, P 0,24 %; 0,03 %; 0,12 %; 0,16 %; and 0,14 % respectively [8]. Enteral feeding using local food in rats is able to provide a good influence on the structure of the epithelial cells of the intestinal mucosa [9].

The study describes the effect of enteral feeding from local food compared with commercial to the condition of body weight, levels of albumin, total plasma protein in rats (*Rattus norvegicus*).

Material and Method

Eighteen Male Wistar rats (2 months) were obtained from Integrated Research and Testing Laboratory (LPPT UGM). Rats were individually housed in stainless cages in a room with a 12-h light cycle and were allowed free access to food and water throughout the study. Rats were divided into three groups: Group A were fed “gogik” (dried cassava, as negative control), Group B were fed enteral nutrition from local food (tempe, rice, mung bean, canna), and Group C were fed commercial enteral nutrition. Before study, all of rats were fed “gogik” (dried cassava) during 14 days. Enteral nutrition was fed 20 gr/day during 30 days and consumption was recorded every day. Whole blood was collected from sinus orbitalis for analysis of total protein and albumin. Observation on body weight, albumin and total protein were made on day 0, 15 and 30. Animal live weight and food consumption were determined during the Study. Whole blood was collected from sinus orbitalis for Albumine and total

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