Tambahan PAGE DOCTORAL DISSERTATIONS

2012

1. Marudut, S. 2012. Efficacy of the Multiple Micronutrients Sprinkle to Improve Iron Status of Adolescent Girls in Inslamic Religious School (Pondok Pesantren). Postgraduate School, Bogor Agriculture University, Bogor.

**FULL ABSTRACT**

Efficacy of the Multiple Micronutrients Sprinkle to Improve Iron Status of Adolescent Girls in Islamic Religious School (Pondok Pesantren).

The dissertation is written in Indonesian.

Marudut S.

Postgraduate School, Bogor Agriculture University, Bogor.

Correspondence: mrdtsitompul@yahoo.com.

Anemia is one of nutrition problems in adolescent school girls and the highest prevalence in Indonesia was found in Tangerang which was 46 – 61%. This research aimed to formulate multiple micronutrients sprinkle (MMS) and to investigate their efficacy to improve hemoglobin (Hb), ferritin serum (SF) and transferrin receptor serum (STfR) levels of adolescent girls. A randomize, double blind, placebo-control trial were conducted for 150 anemic adolescent school girls, grade 9 – 12, aged 14 to 18 years old. The study was conducted in five Islamic Religious School (Pondok Pesantren) in Tangerang. All selected subjects were randomly allocated into 4 groups, each group received MMS twice a week for 16 weeks of 30 mg (Fe30), 25 mg (Fe25) and 20 mg (Fe20) elemental iron of ferrous fumarate plus other micronutrients contain (Se, Zn, Cu, ascorbic acid, riboflavin, pyridoxine, folic acid, cobalamine, vitamin A, vitamin E, malto dextrin and citric acid) and placebo (malto dextrin and citric acid) respectively. One- way ANOVA and ANCOVA were applied to analyze difference in variables tested. Before treatment, the results showed that there were no significant difference among the groups in ages, menarche, duration of menstruation, hemoglobin level, nutrition knowledge and BMI (p>0.05) as well as nutrient intake except for iron and copper. Nutrition knowledge of the subjects were low and all nutrients intake were far below their RDAs. After treatment, there were no difference among the groups in compliance, the changes of a1-acid glycoprotein, cytokine interleukin-6 and hepcidin (p>0.05). A significant difference was found in the changes of hemoglobin (Hb), ferritin serum (SF), transferrin receptor serum (STfR) and body iron (p<0.05). After controlling with confounding variables (ANCOVA test), the changes of of Hb, SF and STfR was not related to potential determinants (p>0.05) and the effects of MMS on the changes of Hb, SF and STfR is significant (p<0.05). The prevalence of anemia decreased into 59.4 % and 35.1% for Fe20 and control groups, respectively. This study conclude that MMS was effectively improve Hb, SF and STfR levels and decrease the prevalence of anemia in adolescent girls and MMS contained 20 mg of elemental iron was the best to increase the iron store and to decrease the pre valence of anemia in anemic adolescent girls.

Keywords: efficacy, multiple micronutrients sprinkle, adolescent girls, iron status

1. Nurrahman; Astuti, M; Suparmo; Susatyo, MHNE. 2012. Potential of Black Soybean Tempe to Increase Level of In Vitro Secretary IgA and Proliferation of Lymphocyte. Postgraduate School Gajah Mada University, Yogyakarta.

**FULL ABSTRACT**

Potential of Black Soybean Tempe to Increase Level of In Vivo Secretary IgA and Proliferation of Lymphocyte.

The dissertation is written in Indonesian.

Nurrahman.

Postgraduate School Gadjah Mada University, Yogyakarta.

Correspondence: nurrahmanmail@yahoo.com

Tempe is an Indonesian traditional food, especially for the Javanese, and is made from soybeans fermented by mould of Rhyzopus spp. to produce a white cake-like product with typical flavour. Commonly yellow soybeans is used, however, in this research black soybeans was selected as the raw material.

Tempe was reported to have good nutrient contents, as well as many health benefits. Children with malnutrition and chronic diarrhea underwent quick recovery and nutritional improvement, as indicated by weight gain, upon tempe formula administration. It was assumed that this is due to modulation of immunity system both systemic and in gastrointestinal system. This research was aimed to observe the potential of black-soybeans tempe to increase activity of antioxidant enzymes, secretory IgA level, and proliferation of lymphocyte, in vivo.

Five steps of research activities were conducted, which were: 1) evaluation of nutrient composition and antioxidant compounds of several variety of soybeans, 2) the effect of species of tempe molds inocula (Rhizopus stolonifer, R. oligosporus and R. oryzae) and incubation times on mould growth, organoleptic properties, and activity of antioxidant in tempe, 3) the effect of tempe and the extract of black soybean tempe consumption on the activity of antioxidant enzymes, lymphocyte proliferation, and IgA secretory in Salmonella typhimurium infected rats, 4) the effect of tempe and extract of black soybean tempe consumption on the activity of human antioxidant enzymes and lymphocyte proliferation, in vivo, and 5) the effect of black soybeans extract on lymphocyte proliferation, activity of protein tyrosine kinase (PTK) and proliferating cell nuclear antigen (PCNA), in vitro.

Mallika black soybean variety contains anthocyanins, which is not found in the yellow soybeans samples (Grobogan and imported yellow soybean varieties). It also contains daidzein, oleic, and linoleic acid higher than those in other varieties. Mould growth on yellow and black soybean tempes, using the three fungus inocula (Rhizopus stolonifer, Rhizopus oligosporus and Rhizopus oryzae) proceeded during 36 hours fermentation process. The growth declined at 42 hours for R. stolonifer and R. oligosporus. However, Rhizopus oryzae that grew slowest, still grew at 42 hours incubation time. Generally, the pattern of mould growth, organoleptic properties, and activity of antioxidant were not different between yellow and black soybean tempe. Tempe quality, as judged using organoleptic method, for tempe produced using R. stolonifer inoculum, incubated for 36 hours were the best among all tempe. Although the antioxidant content still increased during prolonged incubation to 42 hours, the quality of the tempe was not accepted by the panelists. On rats fed black soybean tempe, tempe extract, combination of tempe and its extract, and standard diets the proliferation of T cell index were significantly different. The tempe diet had the highest stimulation effect. On human subjects, tempe diet also showed the highest stimulation effect on T cell proliferation. However, there were no significant effect on the index of stimulation of B cell proliferation and the level of secretory IgA.

Rats given tempe powder were able to increase the activity of antioxidant enzyme (SOD), lymphocytes proliferation (T cell), and lymphocytes survivor against hydrogen peroxide test. On human subjects, tempe consumption was able to increase lymphocytes proliferation (T cell) and lymphocytes survivor against hydrogen peroxide test. On in-vitro observation, ethanol extract of tempe was able to increase proliferation of lymphocytes, activity of PTK enzyme, and PCNA. These in vivo data supported T cell proliferation phenomena observed in in vivo rat and human study in addition to resistency to oxydation. It was concluded that consuming tempe increase cellular immune system.

Keys word: black soybean, tempe, lymphocyte proliferation and secretory IgA

1. Judiono. 2012. The Role Plain Kefir Probiotics on Glycemic Status and Antioxidants, Immune Response of Hyperglicemia Wistar Rats Streptozotocin Induced (Study in Animal Model). Doctoral in Medical Science, Graduate School University of Diponegoro, Semarang.

**FULL ABSTRACT**

The Role Plain Kefir Probiotics on Glycemic Status and Antioxidants, Immune Response of Hyperglicemia Wistar Rats Streptozotocin Induced (Study in Animal Model).

Judiono

Doctoral in Medical Science, Graduate School University of Diponegoro, Semarang.

Correspondence: judi\_fkundip@yahoo.co.id

The dissertation is written in Indonesian.

This study investigated the effect of plain kefir on glycemic, antioxidants, immune response and pancreatic β cell regeneration of hyperglycemia Wistar Rats induced by Streptozotocin. Kefir supplementation 3.6 cc / day affect significantly on blood glucose, antioxidants, lipid peroxidation, and pancreatic β-cells. Statistical analysis showed reduce of glucose (p<0.001), MDA (p<0.001) level of proinflamatory cytokines (IL1, IL6) (p<0.001), except of controls. Antioxidant showed increase of catalase, GPx (p<0.001) and SOD (p<0.05). Similarly, there was increased of IL10 (p<0.05) and the normal cells pancreatic (p<0.001), except of control. TNF-a reduced no significant (p<0.05), except of control. Anova test showed MDA and IL10 were the most contributed to the pancreatic β-cells regeneration by 91.0% and 9% determined by TNF-a, antioxidants, blood glucose, and body weight. In conclusion, Kefir is significantly reduced of glucose lipid peroxide, level of cytokines (IL1, IL6) and enhanced IL10, antioxidants capacity and normal pancreatic β cell expression. Insulin and kefir descriptively reduced TNF-a level.

Keywords: probiotic, plain kefir, hyperglycemia, β cell regeneration, proinflammatory cytokines

2015

1. Helmizar. Effect of Food Supplementation and Psychosocial Stimulation Manjujai based on Local Culture Approach on Growth and Development of Infants 6 to 9 Months of Age in West Sumatera Province. Doctorate Disertation Medical Faculty, Andalas University, Padang.

**FULL ABSTRACT**

Effect of Food Supplementation and Psychosocial Stimulation Manjujai based on Local Culture Approach on Growth and Development of Infants 6 to 9 Months of Age in West Sumatera Province.

Helmizar.

Postraduate program, Padang.

Correspondence: eelbiomed@gmail.com

The dissertation is written in Indonesian.

Malnutrition among Indonesian children in their early life period can be said into global and national concerns. This is mostly due to inadequate nutrition consumption and poor in child care. Therefore, the objective of the study is to investigate the effect of nutritional supplementation and psychosocial stimulation based on local culture on children’s growth and development.

The research deals with quasi experimental study which is designed based on Cluster Randomized Control Trial (CRCT). It was conducted in January until December 2013 at Tanah Datar Agency, West Sumatera Province Indonesia. There are 355 infants aged 6 to 9 months asssesed at the beginning of the study. The infants are divided into 4 groups: Food Supplementation group (FS group), Psychosocial Stimulation group (PS group), Food and Psychosocial Stimulation group (FS+PS group), and Control group (C group). The FS group receives daily food supplementation MP-ASI with local product about 250 to 300 kcal and 6 to 8 grams of protein for 6 months. The PS group receives weekly psychosocial stimulation Manjujai based on local culture approach for 6 months.

The result of study shows, that there is a significant difference on the children’s average lenght improvement in FS group that is 6.86 + 2.08. Such an increase is also found in FS+PP group, that is 6.66 + 2.41. In this context, the difference is very significant (p=0.006). Similarly the nutritional status based on Z-Score weight for height shows a significant difference, that is 0.57 + 1.15 SD with strong effect size (d=0.6). In addition, there is average differance on score improvement in cognitive children’s development, that is 21,38 point + 12.24 with medium effect size (d=0.5). It is also found in score improvement of children’s motoric development, that is 20.65 point + 16.41) with medium effect size (d=0.5). This happens in combined intervention groups showing more significant difference (p=0.003).

In conclusion, combination of two interventions food supplementation and psychosocial stimulation has stronger effect on children’s nutritional status, growth, and development when compared to one type of intervention only. Therefore, the increase of food supplementation and psychosocial stimulation based on Minangkabau culture approach Manjujai, should be applied consistently, regularly, and supported by many sides to obtain children’s optimal growth and development.

Keywords: Food Supplementation, Psychosocial Stimulation, Nutritional Status, Children’s Growth and Development

2016

1. Hidayanty, H. 2016. The Use of Social Cognitive Theory to Develop and Evaluate the Effect of Healthy Lifestyle Program among Overweight Adolescents. Dissertation. Faculty of Medicine Universitas Indonesia, Post-graduate in Nutrition, Jakarta.

**FULL ABSTRACT**

The Use of Social Cognitive Theory to Develop and Evaluate the Effect of Healthy Lifestyle Program among Overweight Adolescents

Healthy Hidayanty

Post-graduate in Nutrition, Jakarta.

Correspondence: hhidayanty@yahoo.com

The study aimed to develop and determine the effect of healthy lifestyle program (HLP) based on Social Cognitive Theory (SCT) among overweight adolescents in Makassar City. It consisted of three stages. Stage one was to develop HLP. Next stage was to develop and validate the instruments for measuring the effect of HLP. The last was to measure the effects of HLP on adolescents’ self-efficacy on healthy behaviors, parents’ self-efficacy, adolescents’ behaviors, and anthropometry indices using cluster randomized controlled trial design. Eight SMP were randomly assigned to intervention and control schools. A total of 238 overweight adolescents and their parents were involved. Changes in outcomes were analyzed using ANCOVA on an intention to treat basis. HLP is twelve sessions of education applied behavior change strategies from SCT including positive reinforcement, self-monitoring, goal setting and parents’ involvement delivered by trained facilitators through weekly group sessions. HLP contributed in increasing adolescents’ self-efficacy for practicing healthy behavior, reducing snacking habit, and changing BMI for age Z-score and waist circumference.

Keywords: Adolescent, Overweight, Social Cognitive Theory, Healthy Behaviors

1. Yani, F F. 2016. Effect of Vitamin D Supplementation on Tuberculosis Infection among Under-Five Healthy Children Exposed to Mycobacterium tuberculosis. Dissertation. Faculty of Medicine Andalas University, Post-graduate Program, Padang.

**FULL ABSTRACT**

Effect of Vitamin D Supplementation on Tuberculosis Infection among Under-Five Healthy Children Exposed to Mycobacterium tuberculosis.

Finny Fitry Yani.

Postraduate program, Padang.

Correspondence: finny\_fy@yahoo.com

The dissertation is written in Indonesian.

Background. Prevalence of tuberculosis (TB) in Indonesia remains high that directly increase the risk of infection among under-five healthy children, whose immune systems are not fully developed. This children can suffer severe illness, disability, and death. It is important to boost the immune system among under-five healthy children, but it has not yet be a concern in the TB control program now. Vitamin D is known to affect innate and adaptive immunity, inhibit bacterial invasion, therefore will protect from tuberculosis infection. Aim. This study aims to evaluate the effects of vitamin D supplementation towards the incidence of tuberculosis infection among under-five healthy children with Mycobacterium tuberculosis contact through levels of vitamin D, IFN-γ, cathelicidin, phagocytic activity of macrophages, and vitamin D receptor genetic polymorphisms in vivo and in vitro. Method. A randomized, double-blind, placebo-controlled trial was conducted. Initial screening among 225 under-five children with TB contact in 22 primary health cares in Padang was done. Among 136 children were eligible for this study, only 66 of them were analyzed. The inclusion criteria was under five children whose tuberculin skin test were negative (healthy). Vitamin D3 supplementation was given two times, each 25.000 IU, with an interval of 6 weeks, and monitored until 12 weeks. Measurements were performed at baseline and repeated after 12 weeks towards the indicators levels of vitamin D, IFN-γ, cathelicidin (ELISA) and macrophage phagocytosis activity. RVD gene was also assessed (PCR). Categorical variables were assessed with chi-square test and continuous variables were compared by using independent t-test. Ethics approval was obtained from the Ethics Committee from Faculty of Medicine, Andalas University. Results. There were no difference of TB infection between intervention and placebo groups (p=0.855). Baseline characteristics showed, the mean levels of vitamin D <30 ng / ml, low IFN-γ, normal cathelicidin, and phagocytic activity > 80%. Most of the subjects have mutant FokI (93.9%), ApaI (72.7%), TaqI (94%), and mutant BsmI was found fewer (25.8%). Vitamin D supplementation significantly increased vitamin D level with the average of 28.47 ± 7.19, p = 0.003. There were no significant differences in mean levels of vitamin D, IFN-γ, cathelicidin, and macrophage activity between the two groups. BsmI has a role in the alteration of vitamin D level, this study showed significant differences between the two groups (p = 0,003). Conclusion. Supplementation of vitamin D for 12 weeks among under-five healthy children with TB contacts did not affect to the incidence of TB infection, but it has increased of vitamin D serum levels. There was an association between mutant genes of VDR BsmI to the rise of vitamin D levels.

2017

1. Widodo, A D. 2017. Pancreatic Exocrine Insufficiency in Children with Persistent Diarrhea and Malnutrition and Effects of Pancreatic Enzyme Supplementation in Persistent Diarrhea. Dissertation. Faculty of Medicine University of Indonesia, Doctoral Degree in Medical Science, Jakarta.

**FULL ABSTRACT**

Impaired Exocrine Pancreatic Function in Children with Persistent Diarrhea and Malnutrition, and Effects of Pancreatic Enzyme Supplementation on Persistent Diarrhea

Ariani Dewi Widodo.

Doctoral Degree in Medical Science, Jakarta.

Correspondence: dr.ariani@gmail.com

The dissertation is written in Indonesian.

Persistent diarrhea is a serious health problem and is closely related to malnutrition. Prolonged mucosal injury in diarrhea is thought to cause reduced secretin and cholecystokinin (CCK) secretion, which decreases stimulation to the pancreas and further aggravate persistent diarrhea and malnutrition.

This research aims to study pancreatic exocrine function in children with persistent diarrhea and children with malnutrition, to obtain reference values of fecal elastase-1 (FE-1) in Indonesian children, and to assess the ability of stool analysis and steatocrit in detecting exocrine pancreatic insufficiency. Cross-sectional study was done to obtain FE-1 distribution in healthy children, to study FE-1 levels in children with persistent diarrhea and children with malnutrition, and to study the sensitivity, specificity, and discriminative capacity of stool analysis and steatocrit in detecting exocrine pancreatic insufficiency. A randomized, double-blind, parallel group, placebo-controlled clinical trial was conducted to evaluate the effects of 8371 USP units of pancreatic enzyme replacement therapy (PERT) 3 times daily for 1 month in children with persistent diarrhea. This study involved children age 6–60 months in 5 hospitals in Jakarta from January 2015 to July 2016.

As much as 182 children 6–60 months of age consisting of 31 children with persistent diarrhea, 31 children with malnutrition, and 120 healthy children were recruited as subjects. Cut-off point of FE-1 in this study was 307 mcg/g faeces. Significant difference of FE-1 was found between children with persistent diarrhea and healthy children. The FE-1 difference between subjects with malnutrition and healthy children was not significant. Duration of diarrhea was 7 days significantly shorter in the PERT group. Changes of FE-1 and prealbumin values between baseline and endpoint in placebo and treatment group were found to be statistically insignificant. The diagnostic value of each stool analysis component and steatocrit test showed that the sensitivity was within range of 5–32%, specificity 73–98%, positive predictive value 1–43% and negative predictive value 87–89%. The AUC values of stool analysis and steatocrit were 0.664 (95% CI 0.539–0.788) and 0.501 (95% CI 0.372–0.629), respectively, and the combined AUC 0,671.

In conclusion, exocrine pancreatic insufficiency was observed in children with persistent diarrhea, and PERT has been proven to significantly shorten the duration of diarrhea by 1 week. Stool analysis and/or steatocrit has low sensitivity, high specificity, and low discrimination capacity.

Keywords: children, exocrine pancreatic function, malnutrition, pancreatic enzyme supplementation, persistent diarrhea