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ABSTRACTS

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Addendum

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susceptible to losses during cooking (~15%) and storage for 4, and 80% RH (~60% in transparent plastic bags and ~45% in light bags). Mean total losses of storage and cooked rice approached
changes were observed.
Storage losses may be considerable and must be taken into account
in the fortification level.

**CHARACTERISTICS AND TOTAL MIGRATION**

**SESAMUNE SOUP** (Colesus amboscinic Lour) IN CANNED BEEF

buthylated hydroxy toluen

Devi Marinka & Endang Warsiki

of Community Nutrition, Faculty of Human Ecology, IPB
Bogor, IDN

Health & Nutrition Centre, Monash Asia Institute, Monash
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of AgroIndustrial Technology, IPB University, Bogor, IDN

is a traditional cuisine consumed by Batakinese lactating women
in Indonesia in order to stimulate their breast milk production.

The soup is prepared using fresh leaves and once cooked it should
be served immediately. Efforts to prolong shelf life of the soup should
be made through soup preparation more efficiently. The present study aimed to
investigate the shelf life characteristic of soup in canned which was added buthylated
hydroxy toluene (BHT) in its preparations. Total plate count and thiobarbituric acid
(TBA) number and rancidity assessments were analyzed. Results of the
study showed that the soup shelf life in cool temperature (5-8°C) and 10-12°C
in room temperature (22 vs. 14 days). Total residual migration of BHT into the soup is lower than 10 mg/dm² allowing by
128/EEC for aqueous food simulant. In conclusion, addition of
preparation can prolong the shelf life of Torbangun soup.

**ADDITION OF KATUK (Sauropus androgynus Merr) IN RICE REPRODUCTION AND MILK PRODUCTION**

Sauropus androgynus Merr) are commonly consumed as diet for
women in Indonesia. This study aimed to study the effect of addition
of Katuk in feed on rice reproduction and milk production. The study
was conducted in a completely random factorial (2x3) with factors: percentage of Katuk
in feed (0, 5 and 10%) and given time of feed (Day-14 during
and day of giving birth). The study results showed that addition of
Katuk had significant effects (P<0.01) on feed consumption of mice.

Feeding of Katuk did not affect litter size and birth weight, and daily body
gain of mice. Significant interaction between the addition level of Katuk and corn of
significant effect (P<0.01) on feed consumption and milk production
and daily weight gain of mice (P<0.05). Addition of 10% Katuk on feed and
14th day of pregnancy had greatest effects on breast milk
and daily weight gain of the newborn.

**ADDITION OF TORBANGUN LEAVES (Colesus amboscinic Lour) IN FEED ON RICE REPRODUCTION AND MILK PRODUCTION**

Colesus amboscinic Lour is used as herb among Batakinese
communities in Sumatera, Indonesia. In Batakinese tradition, Torbangun leaves
are believed to stimulate breast milk production of lactating
mothers. The aim of this study was to compare effects of addition of Torbangun
leaves in fresh or cooked form, in feed on rice reproduction performance and
milk production. The study design was complete random with two factors:
percentage of addition of Torbangun cooked (0 vs. 2.5% vs. 5%) and Torbangun
leaves (5%). The effects of these factors on feed consumption, milk production,
birth litter size, birth and weaning weight, and daily weight gain of mice were
measured. The results showed that addition of Torbangun (fresh or cooked) in feed
had significant effects (P<0.05) on feed consumption and weaning weight of
mice. Levels of addition of Torbangun did not have significant effect on birth
litter size and daily weight gain.

**PI10: Food Composition and Biodiversity II**

**PI10-01**

**SELENIUM, ZINC AND COPPER CONTENTS IN NORTHEAST THAI VEGETABLES**

Boonsri, Patcharee1; Hongsprabhas, Paniti2; Davuang, Jureerat; Yongvanit, Puangrat1

1Department of Biochemistry, Khon Kaen, THA; 2Department of Medicine, Khon Kaen, THA; 2Department of Medical Technology, Khon Kaen, THA

**RATIONALE & OBJECTIVES:** Selenium, zinc and copper are trace elements which act as cofactors of antioxidant enzymes in human. Northeast
Thailand usually consume vegetables accompanied with their meal. Therefore, we aim to determine selenium, zinc and copper contents in 23 edible vegetables in
northeast.

**MATERIALS & METHODS:** The fresh vegetables were purchased from local markets in Khon Kaen during April - September 2008. The concentrations of selenium, zinc and copper were determined by inductive coupled plasma-optical emission
spectroscopy (ICP-OES ).

**RESULTS & FINDINGS:** The studied vegetables exhibited varied selenium, zinc and copper contents. Selenium was found in very low amounts (98.00-0.00 microgram/100g wet wt), whereas zinc and copper concentrations were in the range 2.69-0.01 milligram/100g wet wt. Careya Sphaerica Roxb.C., Barringtonia acutangula Cern., Leucaena leucocephala (Lam).

CONCLUSION: A number of northeast vegetables could be a rich source of
essential minerals.

**PI10-02**

**IRON, ZINC AND PHYTIC ACID LEVELS OF GRAIN AMARANTH COMMONLY USED IN KENYA**

Macharia-Mutic, Catherine Wi1; Brouwer, Inge D1; Mwangi, Alice M1; Kok, Frans J.

1Wageningen University, Nairobi Kenya, KEN; 2Wageningen University, Wageningen, NLD; 3University of Nairobi, Nairobi, KEN

**RATIONALE AND OBJECTIVE:** Grain amaranth is a widely accepted pseudo-cereal. Nutrient composition of the grain amaranth flour in the Kenyan
market is lacking. The objective of this study was to evaluate the proximate and inorganic composition of grain amaranth commonly used in making porridge
flours in Kenya.

**MATERIALS AND METHODS:** Ten samples collected either as grain or flour
were analyzed. Proximate, iron, zinc and phytate analysis was done in duplicate.

RESULTS: Protein content of the samples ranged between 10.8 and 13.8%/100g DM. The grain samples had higher content of dietary fiber compared to flour
samples. The iron and zinc values of the grain ranged between 12.5-72mg/100g and
3.89g/100gDM respectively. Fermented grain amaranth flour had the highest amount of iron among all the samples. The molar ratios of phytate to minerals were above the critical values except the phytate/iron molar ratio of ferment amaranth flour.

CONCLUSION: Whereas the number of samples analyzed in the present study
were relatively few, it is evident that grain amaranth has high iron content and
its bioavailability can be explored further. Though the phytate/iron ratios of
amaranth are relatively low, this was mainly due to high iron values rather than
low phytate level.
EFFECTS OF ADDITION OF TORBANGUN LEAVES (Coleus amboinicus Lour) IN FEED ON MICE REPRODUCTION AND MILK PRODUCTION

Rizal Damanik1,2), Frans Silitonga3) and P.H. Siagian3)

1) Department of Community Nutrition, Faculty of Human Ecology, IPB University, Bogor, Indonesia.
2) Asia Pacific Health & Nutrition Centre, Monash Asia Institute, Monash University, Melbourne, Australia.
3) Department of Animal Production, IPB University, Bogor, Indonesia.

ABSTRACT

Torbangun plant (Coleus amboinicus Lour) is used as herb among Batak people in North Sumatera, Indonesia. In Batak tradition, Torbangun leaves are consumed with the belief it can stimulate breast milk production of lactating mothers. The aim of this study was to compare effects of addition of Torbangun (either in fresh or cooked form) in feed on mice reproduction performance and milk production. The study design was complete random with two factors: percentage of addition of Torbangun cooked (0 vs. 2.5% vs. 5%) and Torbangun leaves (5%). The effects of these factors on feed consumption, milk production, birth litter size, birth weight, and weaning weight, and daily weight gain of mice were studied. The results showed that addition of Torbangun (fresh or cooked) in feed had significant effects ($P<0.05$) on feed conversion and weaning weight of mice. Levels of addition of Torbangun did not have significant effect on birth litter size and daily weight gain.

Key words: Torbangun, coleus amboinicus Lour, Batak, milk production

Introduction

Traditional ingredient use in Indonesia have old recognized since hundreds of year ago. Data have shown that traditional ingredient use expanded progressively. This matter proven with more company majoring elementary ingredient substance plants exist in Indonesia. Expanding of it traditional ingredient usage go together some advantage for example plant to be made a easy ingredient got by breeder, cheap price relative, and seldom generate side effects.

Torbangun Leaves (Coleus Amboinicus Lour) representing one of substance which used as a traditional ingredient in Indonesia. The plants grow wild on calm place and lowland, woman of Batak which suckling, Torbangun leaves (Coleus amboinicus Lour) trusted able to increase product milk water (having the character of as lactagogue). Effect Lactagogue of Torbangun leaves on woman which suckling has been proved scientifically (Damanik, 2001). This research aim to study the influence of addition and time of gift of Torbangun leaves (Coleus amboinicus Lour) on feed to production irrigate milk of mice and growth of mice child.

Materials and methods

Location and Time

The research executed at month of July till September 2006, in Spacious Laboratory (cage C), Shares of Non-Ruminants and Expectation Animal (NRSH), Department of Science of Production and Livestock Technology (DIPTP), Faculty of Livestock, Bogor Agriculture Institute (IPB), Bogor. Feed analysis was conducted at Laboratory of Inter University Center (PAU-IPB) in Bogor.

Equipments and items

Sixty mice, 21 days old, were used in this research was 60 mice consisted of 30 male and 30 female with body weight early $22.03 \pm 2.15$ g/mice. Equipments used are cage, digital weighing-machine, plastic bottle 600 ml, paddy chaff, comb bottle, gauntlet, masker, strand of metal constrictor, cutter. Cage of mice used fairish 36x28x12 cm$^3$. 
Research Phase

Cage Preparation. Cage and all equipment used washed out by using soap clean and sterilized by using alcohol 70% later, then the cage pallet arranged in layers with paddy chaff as much 50 gram per cage.

Identify and Balance of Wight Early Mice. Mice were identified by gender later, then each one of female and masculine mice unit in one cage to be married. Balance of weight early after process identification.

Feed Treatment. Flour of Torbangun obtained from aerated the Torbangun leaves during two-day and put to the sun under sunshine run dry later, then milled by refinement before mingled in feed. Feed of treatment consisted by feed of commercial chicken and Torbangun leaves with the following level:

- R1 : Feed 100 + Torbangun (0%)
- R2 : Feed 95 + Torbangun (5%)
- R3 : Feed 90 + Torbangun (10%)

Research Execution

Mice of married female mice with a male placed in one cage. Vaginal plug was used to ascertain the mated of mice, if there are vagina plug is hence expressed as pregnant first day (Sunarti, 1992). Male mice released from cage if estimated female mice have pregnant 14 day in order to do not bother female mice during pregnant till bear. Gift of feed treatment started on 14 day after pregnant and day of moment bear, where before given by treatment of mice consume feed of commercial chicken or without addition of Torbangun leaves. Feed given always made available every day at 07.00 o'clock, every four day once lock up changed with newly before balance of weight body mice. Drinking water also given always made available every day, through bottle with capacities 265 ml gave by aluminum pipe (so that not eaten by mice), and mice suck water of through the pipe.

The Design

The design of the study was completely random design factorial (2x3) with two factors; dosage or Torbangun leaves added on feed (0, 5 and 10%) and time give the feed-containing Torbangun (on the 14th day of pregnant period and on day of giving birth) The significant results were analyzed by Tukey tests. Model mathematics (Steel and Torrie, 1993) used in this research is following:

\[ Y_{ijk} = \mu + \alpha_i + \beta_j + (\alpha\beta)_{ij} + \epsilon_{ijk} \]

Note:
- \( Y_{ijk} \): Assess perception at factor A pregnant level to-i, factor B level to-j and restating to-k
- \( \mu \): average
- \( \alpha_i \): Influence of addition of Torbangun Level to-i;
  - i = 0, 5, and 10%
- \( \beta_j \): Gift time influence to-j; j = pregnant age 14 day and day bear
- \( (\alpha\beta)_{ij} \): interaction of dosage Torbangun and gift time
- \( \epsilon_{ijk} \): Attempt error of treatment to-i and to-j and also restating to-n; n = 1, 2, 3, 4, 5

Result

Feed Consumption

Result of perception indicate that rate feed consumption is 9.13±1.05 g/mice/day (Table 1). This result indicate that rate feed consumption research supported by opinion Smith and Mangkoewidjojo (1988), expressing that adult mice need feed 3-5 gram every days, and for pregnant mice and lactation can consume more amount.

Result of analysis show that the Torbangun leaves gift time and level influence in feed and also interaction of gift time and level have an effect on very significant (P<0.01) to feed consumption. Level Torbangun in feed R1, R2 and R3 differ very real one another, where downhill consumption very real at the height of level Torbangun in feed each 10,29; 9,01 and 8,10 g/mice/day. Degradation feed consumption with Torbangun leaves level mounting reduced the leaves palatability (Sutardi, 1981; Parakkasi, 1999). Gift
Torbangun time in feed have an effect on very significant (P<0.01) to feed consumption, where 14th day of pregnant period (H1) real compared to day of giving birth (H2) each 9.44 and 8.82 g/mice/day.

Table 1. Rate of Feed Consumption Mice

<table>
<thead>
<tr>
<th>Time Give (day)</th>
<th>Level Torbangun (%)</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0 (R1)</td>
<td>5 (R2)</td>
</tr>
<tr>
<td>H1</td>
<td>10.26±0.55</td>
<td>9.34±0.22</td>
</tr>
<tr>
<td>H2</td>
<td>10.32±0.46</td>
<td>8.67±0.19</td>
</tr>
<tr>
<td>Rate</td>
<td>10.29±0.51</td>
<td>9.01±0.40</td>
</tr>
</tbody>
</table>

Superscript of different block letters at same line or column show result very significant (P<0.01)
H1 = 14th day of pregnant period; H2 = day of giving birth

Milk Production

Result of analysis show, that level of gift have an significant (P<0.05) and time and also the interaction usher level and time of gift of Torbangun in feed very significant (P<0.01) to milk production of mice. Torbangun 5% in feed which passed to] a pregnant moment 14th day of pregnant period (R2H1) proven to increase milk product (Table 2). This result is supported by Silioniaga study (1993), expressing that production irrigate milk mount mains of rat gave by Torbangun extract was possibly cause by existence of improvement of growth and activity of gland of mammac and also metabolism of rat body. Difference of result of this also happened because improvement of rate of DNA and RNA of gland of mammac and also degradation of concentration of T4 and serum glucose. According to Nurendah (1982), Torbangun leaves have the nature of like hormone oxytocin (nature of oksitosik). Hormone of Oxytocin that is hormone released together with prolactin as suckle response (Ghosh and Slandek, 1995). Torbangun contain calcium which was also important in milk secretion. According to Mephan (1987), ox experiencing of stress will require additional addition sodium as much 1% to prevent degradation of milk secretion irrigate. Deficiencies of sodium cause degradation of weight of body and degradation of milk production.

Tables 2. Rate of Milk Production

<table>
<thead>
<tr>
<th>Time Give (day)</th>
<th>Level Torbangun (%)</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0 (R1)</td>
<td>5 (R2)</td>
</tr>
<tr>
<td>H1</td>
<td>0.09±0.02</td>
<td>0.18±0.04</td>
</tr>
<tr>
<td>H2</td>
<td>0.09±0.01</td>
<td>0.08±0.08</td>
</tr>
<tr>
<td>Rate</td>
<td>0.09±0.01</td>
<td>0.13±0.06</td>
</tr>
</tbody>
</table>

Superscript with different lower case and an block letters at same line or column show significant (P<0.05) and very significant (P<0.01)
H1 = 14th day of pregnant period; H2 = day of giving birth

Litter Size Born

Litter size born is full scale of child borne by mice mains of good live and also the death. Result of analysis were presented at Table 3 indicating that rate litter size is 8.57±2.16 mice. According to Malole and Pramono (1989), slimmer first litter size generally than next litter size, and became optimal production of litter to 2-8 which can reach 10-12 mice/ birth. Influence of level and time of gift Torbangun leaves in feed and also interaction of both do not significant to litter size born.

Table 3. Rate of Litter Size Born

<table>
<thead>
<tr>
<th>Time Give (day)</th>
<th>Level Torbangun (%)</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0 (R1)</td>
<td>5 (R2)</td>
</tr>
<tr>
<td>H1</td>
<td>9.00±1.41</td>
<td>9.00±1.00</td>
</tr>
<tr>
<td>H2</td>
<td>6.60±3.05</td>
<td>8.80±2.59</td>
</tr>
<tr>
<td>Rate</td>
<td>7.80±2.57</td>
<td>8.90±1.85</td>
</tr>
</tbody>
</table>

H1 = 14th day of pregnant period; H2 = day of giving birth
Weight Newborn Mice
Weight newborn mice to represent weight obtained by considering all child of birth of each mains then divided with amount all of deliberated child. Weight newborn mice child during research is 1.45±0.17 g/mice. Weight born obtained high enough because Malole and Pramono (1989), expressing that weight newborn mice range from 0.5-1.5 g/mice. Excelsior weight newborn mice, meaning progressively the child ability goodness mentioned in using feed given its mains during in utero. Influence of time Torbangun in feed with level and interaction of both do not have an effect on reality to weight newborn. Rate of weight newborn during research take place at Table 4.

Table 4. Rate of Weight Newborn Mice

<table>
<thead>
<tr>
<th>Time Give (day)</th>
<th>Level Torbangun (%)</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0 (R1)</td>
<td>1.49±0.18</td>
</tr>
<tr>
<td></td>
<td>5 (R2)</td>
<td>1.49±0.18</td>
</tr>
<tr>
<td></td>
<td>10 (R3)</td>
<td>1.43±0.14</td>
</tr>
<tr>
<td>Rate</td>
<td>1.49±0.18</td>
<td>1.49±0.18</td>
</tr>
</tbody>
</table>

H1 = 14th day of pregnant period; H2 = day of giving birth

Weaning-Weight
Weaning to represent growth phase shall no longer base on milk production of mains and start to consume solid feed and the drinking water. Weight weaning obtained conducted balance at the time of child old age 21 day. Weaning shall be conducted by a age moment wean, because if more early hence the child growth will be lost time. Mice weaned at age 14-16 day will not grow as good as which remain to with mains old age 20-21 day. Rate weaning-weight during research is 8.30±1.73 g/mice (Table 5). Result of analysis show, that leaf Torbangun gift time and interaction of gift time and level have an effect on very significant (P<0.01) to weaning-weight but level influence in feed do not significant. Torbangun contain sodium, calcium give positive respond to growth of mice child. Calcium is one of very important additional mineral at child for the normal growth and also the nerve growth of during in content.

Table 5. Rate of Weaning-Weight

<table>
<thead>
<tr>
<th>Time Give (day)</th>
<th>Level Torbangun (%)</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0 (R1)</td>
<td>8.65±0.65</td>
</tr>
<tr>
<td></td>
<td>5 (R2)</td>
<td>10.93±0.67</td>
</tr>
<tr>
<td></td>
<td>10 (R3)</td>
<td>8.99±0.47</td>
</tr>
<tr>
<td>Rate</td>
<td>8.61±0.58</td>
<td></td>
</tr>
</tbody>
</table>

Superscript of different block letters at same line or column show result very significant (P<0.01)
H1 = 14th day of pregnant period; H2 = day of giving birth

Body Weight Gain of the Newborn
Child body weight gain of the newborn is indication from itself child growth. Growth from delivering birth wean most influenced by milk amount yielded by individual health and mains itself. Rate of body weight gain of the newborn during research is 0.35±0.11 g/mice/day. Result of analysis show, that leaf Torbangun gift time and interaction of gift time and level have an effect on very significant (P<0.01) to weaning-weight but level influence in feed do not significant (Table 6).

Table 6. Rate of Body Weight Gain of the Newborn

<table>
<thead>
<tr>
<th>Time Give (day)</th>
<th>Level Torbangun (%)</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0 (R1)</td>
<td>0.37±0.18</td>
</tr>
<tr>
<td></td>
<td>5 (R2)</td>
<td>0.50±0.01</td>
</tr>
<tr>
<td></td>
<td>10 (R3)</td>
<td>0.40±0.04</td>
</tr>
<tr>
<td>Rate</td>
<td>0.35±0.19</td>
<td></td>
</tr>
</tbody>
</table>

Superscript of different block letters at same line or column show result very significant (P<0.01)
H1 = 14th day of pregnant period; H2 = day of giving birth
Mortality

Rate of mortality obtained during research was 22.11%. Influence of time Torbangun in feed with level and interaction of both do not have an effect to mortality. Mortality of this research do not because of treatment however the nature of cannibalism mice mains, this matter is proven from carcass inexistence which left behind in cage whereas child amount decrease. Cannibalism of mains can be caused annoying of mains after bearing because often conducted balance of child and mains that is four day once.

Conclusion

Results collected from the present study showed that addition of Torbangun leaves in feed had significant effects (P<0.01) on feed consumption, and milk production (P<0.05) of the mice. The addition of leaves did not affect the litter size and weight of the newborn mice, and the mortality rate. The interaction between the addition level of Torbangun leaves and the given-time of feed, had significant effect (P<0.01) on feed consumption, milk production, weaning-weight and body weight gain of the newborn mice. The interaction, however, did not affect the weight born, litter size of newborn and the mortality rate. In conclusion, the addition of 5% of Torbangun leaves in feed and be given on the 14th day of the pregnancy period had shown the greatest effect on milk production and body weight gain of the newborn.

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