PROCEEDING

international seminar

STRATEGY TO MANAGE BIO-ECO-HEALTH SYSTEM
FOR STABILIZING ANIMAL HEALTH
& PRODUCTIVITY TO SUPPORT PUBLIC HEALTH

Surabaya-Indonesia, 19-20 June 2012
JW Marriott Hotel Surabaya

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I-MHERE SUB-COMPONENT B.2.C PERFORMANCE BASED CONTRACT
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ABSTRACT

The theory of the Five Elements on Traditional Chinese Medicine (TCM) was based on the idea that everything in the universe was the produce of movement and change of five basic elements. Liver represent Wood and Kidney represent Water. Purpose of the research was developed TCM model especially in its interaction of liver and kidney function through blood using equally parameter. Population Kacang Goat (Capra sp.) consists of 15 males and females were administered blood samples 5 cc each. Blood was obtained on SGOT, SGPT, total erythrocyte, PCV, Hb, BUN, creatinin, and protein. Model was evaluated through loading factor analysis, average variance extracted value (AVE), Cronbach’s Alpha, and t test. Model was significantly difference if loading factor more than 0,5; AVE value for each construct variable > correlation between constructs; Cronbach Alpha ≥ 0,70; and t_{males} > t_{male} on α = 5%. Result of the research shown AVE value for all variable i.e. kidney, liver, and blood, respectively, was more than 0.5 and √AVE > correlation between variables, suggested research model has enough validity discriminate. Addition results, each variables has composite reliability more than 0,70. According to analysis all of the tables, traditional model of the Five Elements theory for interaction liver and kidney function through blood as mediator became change.

Keywords: five element model, liver, kidney, blood

INTRODUCTION

The theory of the Five Elements on Traditional Chinese Medicine (TCM) was based on the idea that everything in the universe was the produce of movement and change of five basic elements namely Wood, Fire, Earth, Metal, and Water. Liver represent Wood and Kidney represent Water. In TCM, Five Elements theory has had a major influence in diagnosis, treatment, pathology, and physiology. In Chinese philosophy, the interaction of the Five Elements explains the nature of all phenomena. This element was not actual matter, but concepts. Often, this has made it difficult for the Western doctor to incorporate Chinese theory into a practice that is based on matter. (Schoen, 2001; Saputra, 2002).

Placing these elements on a circle makes it distinct cycles of the elements are used in diagnosis and treatment. The Sheng cycle means one of creation or production. A certain element will create another one to its right in a clockwise fashion. That, in turn, produces the next one and so on around the cycle. Therefore, Water produces Wood, and Wood produces Fire. More specifically, Wood was produced from Water, as vegetation needs water or moisture to grow. It is common to use the terms Mother and Son. Using these term, then, Water would be Mother of Wood, and Wood would be Son of Water. (Jie, 2002).
Figure 1. Five Elements model according to Traditional Chinese Medicine
Source: Anonymous, 2012

Purpose of the research was the development of TCM model especially in its interaction of liver and kidney function through blood using equally parameter.

MATERIALS AND METHODS

Population Kacang Goat (Capra sp.) consists of 15 males and females were administered blood samples 5 cc each. Blood was obtained on SGOT, SGPT, total erythrocyte, PCV, Hb, BUN, creatinin, and protein.

SGOT and SGPT was construct variable of liver function, whether BUN, creatinin, and protein was construct variable of kidney function. Therefore, variable construct of blood was total erythrocyte and PCV (Sudirman, 2006; Soeharsono, 2008).

Model was evaluated through loading factor analysis, average variance extracted value (AVE), Cronbach's Alpha, and t test. Model was significantly difference if loading factor more than 0.5; AVE value for each construct variable > correlation between construct; Cronbach's Alpha ≥ 0.70; and t大于 table on α = 5% (Ghozali, 2008).

RESULT AND DISCUSSION

Analysis of the Table 1 and Table 2 was shown outer loading factor on all indicator value more than 0,5 and t more than 1,96. Both blood analysis supports that all variable was valid indicator as equally variable. Similar result when comparing analysis on Table 4 and Table 5. Evaluation to the inner model structure shown both liver and kidney as free variable, whether dependent variable was blood. Analysis coefficient value was shown on Table 4 supported determinant value model was 0.47 after calculated on (1 - (1- \( R^2_{\text{kidney}} \))(1- \( R^2_{\text{blood}} \)).
Table 1. Descriptive analysis blood parameter of the Kacang Goat

<table>
<thead>
<tr>
<th>Parameter</th>
<th>n</th>
<th>Intercept</th>
<th>Lower Value</th>
<th>Upper Value</th>
<th>Mean</th>
<th>Standard Error</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hb</td>
<td>15</td>
<td>7.82</td>
<td>2.43</td>
<td>10.25</td>
<td>8.03</td>
<td>0.51</td>
<td>1.99</td>
</tr>
<tr>
<td>PCV</td>
<td>15</td>
<td>9</td>
<td>10</td>
<td>19</td>
<td>14.78</td>
<td>0.63</td>
<td>2.45</td>
</tr>
<tr>
<td>Erythrocyte</td>
<td>15</td>
<td>9.14</td>
<td>10.06</td>
<td>19.20</td>
<td>14.38</td>
<td>0.67</td>
<td>2.60</td>
</tr>
<tr>
<td>SGOT</td>
<td>15</td>
<td>2,17</td>
<td>3.14</td>
<td>5.31</td>
<td>4.20</td>
<td>0.14</td>
<td>0.54</td>
</tr>
<tr>
<td>SGPT</td>
<td>15</td>
<td>79</td>
<td>29</td>
<td>108</td>
<td>76.00</td>
<td>5.50</td>
<td>21.43</td>
</tr>
<tr>
<td>Protein</td>
<td>15</td>
<td>13</td>
<td>6</td>
<td>19</td>
<td>8.73</td>
<td>0.79</td>
<td>3.058</td>
</tr>
<tr>
<td>BUN</td>
<td>15</td>
<td>13.95</td>
<td>13.13</td>
<td>27.08</td>
<td>17.09</td>
<td>0.88</td>
<td>3.42</td>
</tr>
<tr>
<td>Creatinin</td>
<td>15</td>
<td>10.64</td>
<td>.60</td>
<td>11.24</td>
<td>2.75</td>
<td>0.78</td>
<td>2.93</td>
</tr>
</tbody>
</table>

Table 2. Loading factor for each indicator

<table>
<thead>
<tr>
<th>Variable</th>
<th>Indicator</th>
<th>Outer Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kidney</td>
<td>BUN</td>
<td>0.871 ± 0.091</td>
</tr>
<tr>
<td></td>
<td>Creatinin</td>
<td>0.779 ± 0.082</td>
</tr>
<tr>
<td></td>
<td>Protein</td>
<td>0.495 ± 0.013</td>
</tr>
<tr>
<td>Blood</td>
<td>Erythrocyte</td>
<td>0.575 ± 0.160</td>
</tr>
<tr>
<td></td>
<td>Hb</td>
<td>0.955 ± 0.017</td>
</tr>
<tr>
<td></td>
<td>PCV</td>
<td>0.924 ± 0.054</td>
</tr>
<tr>
<td>Liver</td>
<td>SGOT</td>
<td>0.816 ± 0.034</td>
</tr>
<tr>
<td></td>
<td>SGPT</td>
<td>0.955 ± 0.007</td>
</tr>
</tbody>
</table>

Table 3. Value of Composite Reliability, AVE, and √AVE

<table>
<thead>
<tr>
<th>Variable</th>
<th>Composite Reliability</th>
<th>AVE</th>
<th>√AVE</th>
<th>Correlation between Latent Variable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kidney</td>
<td>0.768</td>
<td>0.537</td>
<td>0.722</td>
<td>Kidney-Blood = 0.409</td>
</tr>
<tr>
<td>Blood</td>
<td>0.869</td>
<td>0.876</td>
<td>0.926</td>
<td>Blood-Liver = 0.552</td>
</tr>
<tr>
<td>Liver</td>
<td>0.934</td>
<td>0.699</td>
<td>0.817</td>
<td>Liver-Kidney = 0.409</td>
</tr>
</tbody>
</table>

Table 4. Coefficient Determinant of Variable

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient Determinant (R²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kidney</td>
<td>0.000</td>
</tr>
<tr>
<td>Blood</td>
<td>0.340</td>
</tr>
<tr>
<td>Liver</td>
<td>0.192</td>
</tr>
</tbody>
</table>

Table 5. Interaction between variable, coefficient of row, and t

<table>
<thead>
<tr>
<th>Interaction between Variable</th>
<th>Coefficient of Row</th>
<th>t_statistic</th>
<th>Result*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kidney – Liver</td>
<td>0.207 ± 0.0109</td>
<td>1.892</td>
<td>Insignificant</td>
</tr>
<tr>
<td>Kidney – Blood</td>
<td>0.462 ± 0.0105</td>
<td>4.385</td>
<td>Significant</td>
</tr>
<tr>
<td>Blood – Liver</td>
<td>0.438 ± 0.0102</td>
<td>4.309</td>
<td>Significant</td>
</tr>
</tbody>
</table>

* comparison on t = 1.96 on α = 0.05

AVE value for all variable i.e. kidney, liver, and blood, respectively, was more than 0.5 and √AVE > correlation between variables, suggested research model has enough validity discriminate. Addition results, each variables has composite realibility more than 0.70 as seen on Table 3.
The basis for Zhang–Fu Syndromes is an understanding normal function of each of the 12 primary organs within the context of TCM and a knowledge patterns that may result when these functions are adversely affected (Lim, 2010; Kabalak et al., 2005). Each Zhang (Yin) organ was paired with a Fu (Yang) organ in a complementary, mutually supportive relation. Diagnostically and therapeutically, one can classify disease patterns by the Zhang-Fu organ system affected. Liver has several functions, namely, govern the smooth flow of Qi, strongly influenced and affected by emotional state, controls the tendons and ligaments, store the blood and regulates its distribution to tissues, and opens into the eyes. Whether kidney has functions, namely, governs water, produces marrow (including brain and spinal cord), controls the bones, stores the essence (the basis for all the body’s Yin and Yang), opens into the ears, and delivery dirty water off the body through urinary tract (Pan and Zhou, 2005; Poernomo, 2005).

According to analysis all of the tables, traditional model of the Five Elements theory for interaction liver and kidney function through blood as mediator was shown on Figure 2.

![Figure 2](image)

Figure 2. Empirical model for interaction liver and kidney function through blood as mediator

REFERENCES


