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**Suntheanine®**

**Effect of Suntheanine®  
on the Symptoms of  
Premenstrual Syndrome**

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**Translated from the Proceedings of the Noge  
Kagaku Kai, (Biosci. Biotech. Biochem. 75, 166,  
March 2001, Kyoto), in cooperation with Taiyo  
Kagaku Co., Ltd., University of Shizuoka and  
The Family Planning Institute of Japan.**

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JSPOG, Vol. 6, No. 2, pp 234-239, Dec. 2001  
“Improving Effect of L-Theanine on  
Premenstrual Syndrome).**



**TAIYO INTERNATIONAL, INC.**

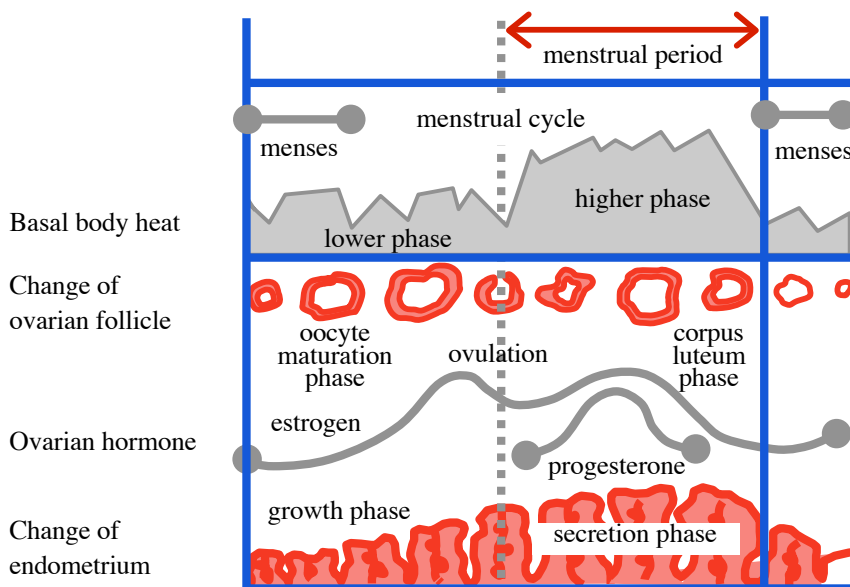
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## Premenstrual Syndrome ( PMS )

Premenstrual Syndrome (PMS) is a symptom unique to women, which appears in the luteal phase from the ovulation period through the first day of menstruation. It possesses characteristics of having a peak just prior to menstruation and disappearing 1 - 2 days following the start of menstruation. Symptoms of PMS are generally categorized as mental, physical and social symptoms, with over 150 symptoms reported.

## Stages of Premenstrual Syndrome



## Typical Symptoms of PMS

### Physical Symptoms

Sleepiness, fatigue, breast pain/stiffness, rough/chapped skin, lower abdominal pain, headaches, coldness in hands and feet, edema.

### Mental Symptoms

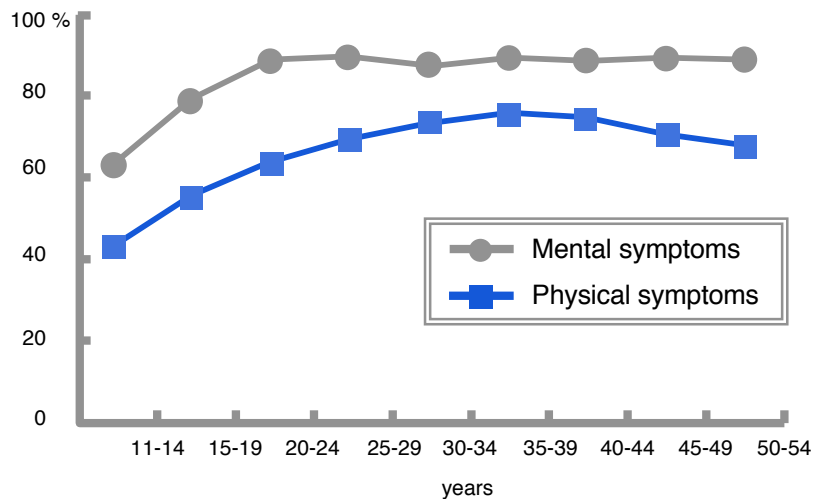
Irritability, anger, anxiety, decreased self-esteem, depression, fear, poor concentration.

### Social Symptoms

Absence from work, self dislike, desire to be alone, poor personal hygiene, desire to stay at home.

## Symptoms Prior to Menstrual Period

In an attitude survey for menstruation compiled by the MSG Workshop, 1990, 70% of women, especially in that of mature women, experience symptoms of PMS.



## **Test Subjects**

A clinical test to determine the effects of Suntheanine® on the various symptoms of PMS was conducted. The chart below summarizes the attributes of the test subjects.

Total subjects	20
Age (years)	30.3 (22 - 49)
Cycle (days)	31.0 (24 - 50)
Menstrual period (days)	5.1 (3.3 - 8)
Menarche	12.3 (11 - 14)
Married Subjects	8 / 20
Subjects with children	4 / 20
Occupation	Researcher            13 Teacher                2 Clerk                    4 Nurse                    1

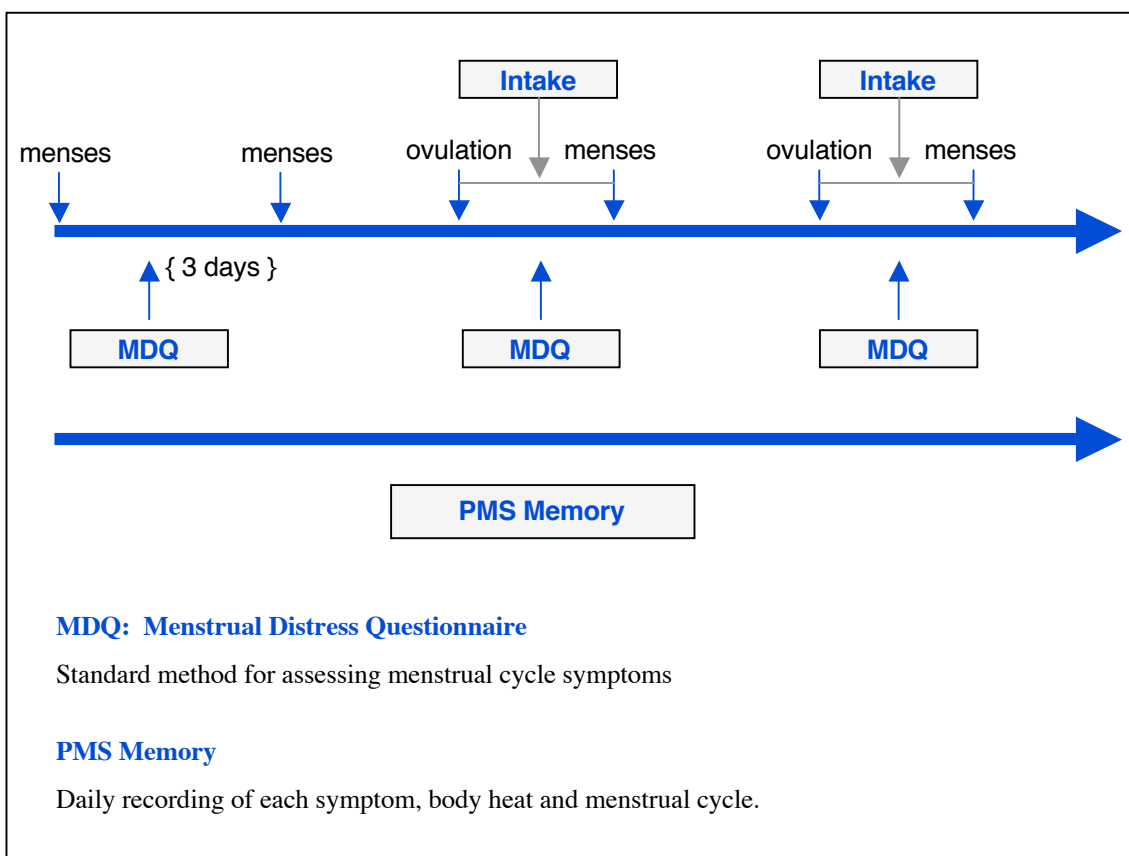
In the study, subjects were treated with tablets containing either 50 mg Suntheanine® per tablet (Taiyo Kagaku Co., Ltd.) or a placebo. Subjects did not receive any explanation of the tablets prior to or during the investigation period. Subjects took two 50 mg tablets at 10:00 a.m. and another two tablets at 2:00 p.m., for a total of 200 mg Suntheanine® per day.

## Test Method

The test duration consisted of 3 menstruation cycles. Basal body temperature and PMS memory, as established by the Family Planning Institute of Japan, was recorded by all subjects in order to observe conditions of ovulation, daily patterns, symptoms of PMS and menstruation.

The first cycle was regarded as the control. Crossover tests were conducted using Suntheanine® and / or a placebo for the second and third cycles.

Test subjects were required to answer a Menstrual Distress Questionnaire (MDQ) survey 3 days prior to expected menstruation date and at the time of first and second administrations.



### MDQ (Menstrual Distress Questionnaire)

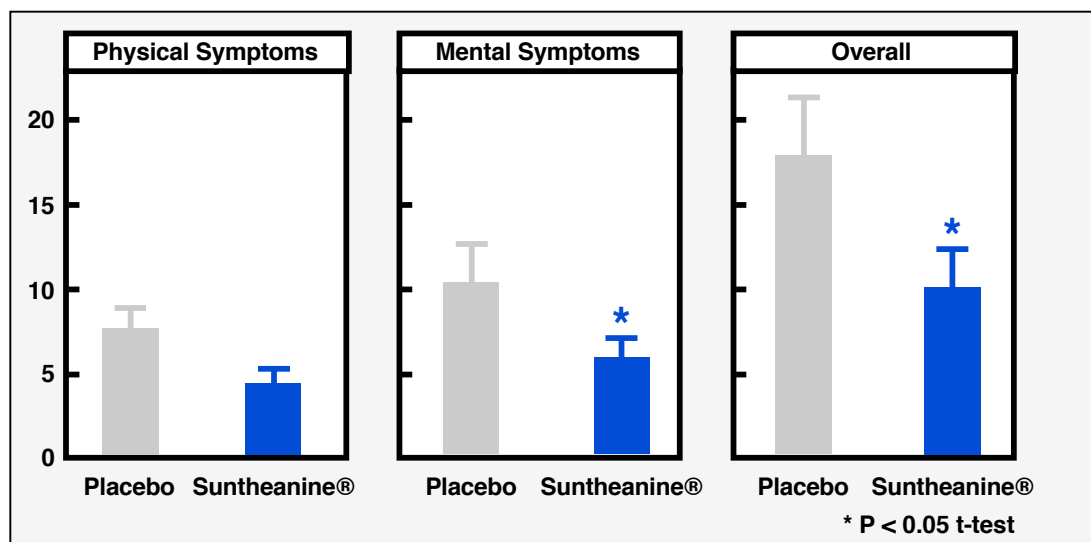
The MDQ survey, developed by Moos, R, et. Al., contains 47 questions, divided into the following 8 categories:

Physical Symptoms	
<b>Pain</b>	Muscle stiffness, headache, cramps, backache
<b>Concentration</b>	Insomnia, forgetfulness, lowered judgment
<b>Behavioral change</b>	Stay at home, avoid social activities
<b>Autonomic reactions</b>	Dizziness, cold sweats, vomiting
<b>Water retention</b>	Weight gain, skin disorders, swelling
<b>Negative affect</b>	Depression, anxiety, loneliness, irritability

Mental Symptoms	
<b>Arousal</b>	Orderliness, excitement, bursts of energy
<b>Control</b>	Feelings of suffocation, ringing of ears, pounding of heart

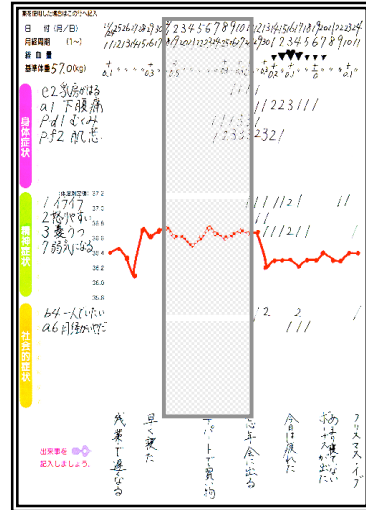
### Total MDQ Score

The following chart indicates the results of the MDQ Questionnaire. Higher scores indicate an increased acknowledgement of physical and mental symptoms associated with PMS. Suntheanine® was found to have a lower score compared to that of the placebo in both mental and physical symptoms, with the effect on mental symptoms being the greatest.

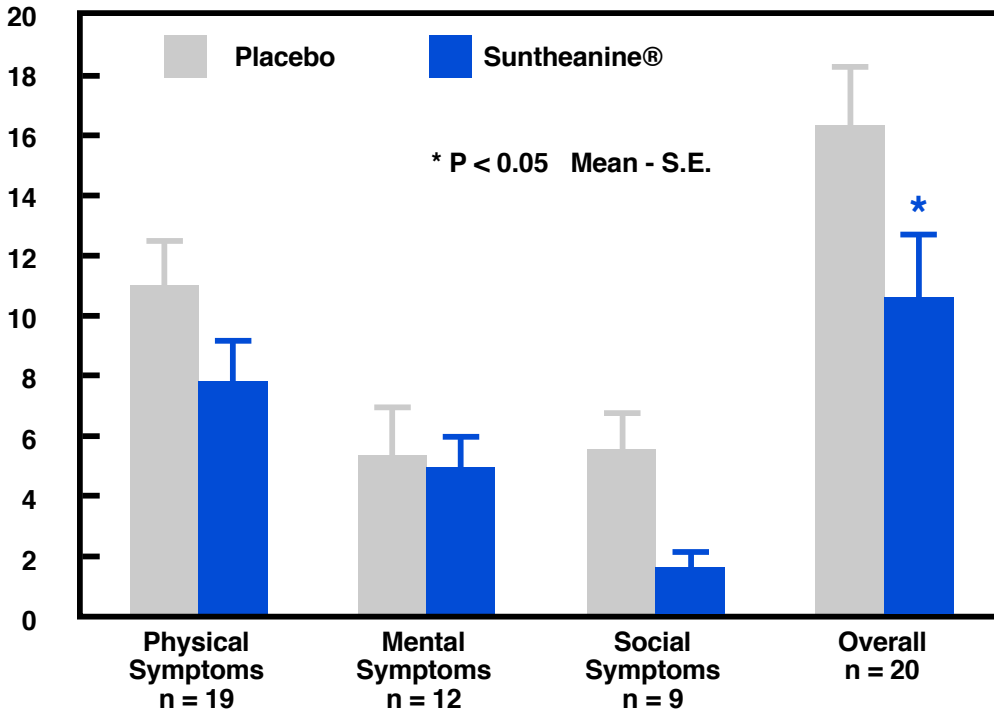


**PMS Memory**

The PMS Memory, established by the Family Planning Institute of Japan, categorizes the 10 day luteal phase by physical, mental and social symptoms, with a statistical compilation. In this study, the effects of Suntheanine® on the PMS memory were compared to that of the placebo.



**Comparison of PMS Symptoms in Luteal Phase**



When comparing the reported Symptoms of PMS by the method of PMS Memory, the Suntheanine® group was found to have lower incidence of PMS symptoms, including physical, mental and social symptoms. Overall, a significant alleviation of PMS symptoms by Suntheanine® was observed.