Evaluation of human satisfaction on combination of wine and meal using near infrared spectroscopy (NIRS)

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The 21st century is called "Century of the brain science". The brain science has been remarked as the science frontier which is the most familiar for human. The reason of this trends is that the human activities can be observed by the brain measurement equipments such as fMRI (A functional magnetic resonance imaging; Functional Magnetic Resonance Imaging) and MEG (The magnetoence phalography ; Magnetoence phalogram). By using such visualization technology of brain activities, brain mechanism and information processing in brain for recognition, memorizing, learning, language, thought, action, emotion, and other human activities have been revealed. Furthermore, fusion of brain science and other domain has brought new research fields such as cerebral nerve psychology or neural economics. Thus, many researches applying brain science have been started. In this research, I apply this brain science to measure human satisfaction, which is one of such research trends and an application of brain science to service science.

The combination of wine and meal gives influence to human satisfaction. For example, red wine and beef cooking or white wine and fish cooking seem to be good combination and give good influence for human satisfaction. On the other hands, red wine and fish cooking is not good combination. How human brain responds to the combination of wine and food? In this research, we apply a near infrared spectroscopy (NIRS) for measuring brain activities of human satisfaction on wine and food.

The experiment in this research consists of a near infrared spectroscopy (NIRS), 10 subjects, and 4 pattern combination of wine and food.　Questionnaires about their

satisfaction of the combination were performed. By analyzing measured brain activities and questionnaire data, we found several facts related to human satisfaction on wine and food as follows;

1. Concerning on comparison between strong drinkers and weak drinkers：

   1) The brain activities of strong drinkers change gradually, on the other hand those of weak drinkers change rapidly.

   2) When strong drinkers feel happy, the brain activities are calm. On the contrary, when weak drinkers feel bad, the measurements of brain change from red to blue rapidly.

2. Concerning on the feeling of satisfaction about the combination of wine and meal:

   When subjects felt good combination of wine and food, the brain activities were calm. When subjects felt bad combination, brains were more active.

3. Concerning on comparison of wine/food and water/food:

   The combination of wine and fish activates brain activities. On the contrary, the combination of water and fish keeps brain activities calm.

   From the result of this experiment, evaluation of human satisfaction on combination of wine and food seems to be possible using near infrared spectroscopy (NIRS). And the brain measurement seems to be an effective methodology for service value improvement. I suggest that a new brain science should be applied for improvement of service quality which is related to human satisfaction.