

Application of Functional aromas, which improve premenstrual syndrome (PMS)

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Most women are troubled with a women's unidentified complaints such as premenstrual syndrome (PMS), maternity blues and menopausal disorder that is characterized by mental and somatic symptoms (depression, lassitude, a will fall, sleeplessness, overeating and anxiety). On the other hand, it is well known that olfactory system is directly connected to the hypothalamus and the limbic system. Thus, olfactory stimulation pathway may be a new method to modulate the emotion. We aim to identify the odor compounds which improve the women's unidentified complaints and to apply it to the cosmetics.

It is reported that citrus essential oil odors reduced the depressive symptoms. 1) We assessed whether citral odor which including citrus oil also reduced the immobility time (an index of the depressive symptoms) in forced swim test in female mice. In addition, it is well known that chamomile roman essential oil odors reduced the anxiety symptoms in relation to the menopausal disorder. 2) We assessed whether chamomile odor increased the moving distance and duration in the light box (an index of the anxiety symptoms) in the LD box test in female menopausal disorder model mice. 3) Moreover, we focused whether β -caryophyllene and linalool odors which including ylang-ylang essential oil improve the symptoms of the PMS. We used a psychological VAS (visual analog scales) method to assess the subject's mental symptoms (friendliness, alertness, happiness, eagerness and fatigue). The protocol observed the tenets of the Helsinki Declaration and was approved by the Ethics Committee at Nagasaki University.

1) As a result of the forced swim test, citral odor group tended to reduce the immobility time compared with the control group. Thus, citral odor may reduce the depression as consider in previous report. 2) In the LD box test, chamomile odor group increased the moving distance and duration in the light box. It is suggested that chamomile odor reduce the anxiety in menopausal disorder. 3) In human subjects, β -caryophyllene significantly improved the PMS symptoms. β -caryophyllene increased friendliness, eagerness and happiness scores in luteal phase. In addition, β -caryophyllene reduced fatigue score in luteal phase, but not in alertness. On the other hand, linalool significantly increased alertness in follicular phase, but not in other PMS symptoms. These results suggest that β -caryophyllene may improve the PMS symptoms, such as depressive, lassitude and a will fall symptoms.