

RECENT RESEARCH ACTIVITIES

Relaxation effects in the scent of *Lilium japonicum*

(Laboratory of Innovative Humano-habitability, RISH, Kyoto University)

Aya Yanagawa

Lilium japonicum has been a sacred flower of Miwa shrine in Nara for over 1300 years. It has been symbolized for disease resistance, and dedicated to the gods who controls disease epidemics. Japanese people traditionally come to pray in this shrine with the wishes of disease healing. The shrine holds two annual ceremonies, which called as Chinka-festival (flower comforting festival) and Saikusa-festival (Yuri festival) to placate the ancient gods and sprits. Saikusa festival is called also as Lily festival since *L. japonicum* has been dedicated to the guardian god. In this study, to approach the pharmaceutical reason behind the dedication of this flower, the questionnaire-based investigation has been conducted to learn the influence of its scent on human physiological condition.

Materials and methods

The questionnaire was designed by the physiological and psychological parameters (Miyazaki 1997; Higuchi et al., 2002). The survey was conducted at the lily garden in Miwa shrine, Nara, from 27th May to 18th June 2017 during the annual opening time of the lily garden. The questionnaire was provided randomly to visitors. A volunteered visitor cooperated to the survey. We have collected the answer from 239 visitors including 165 females and 65 males. Nine people did not provide the information of their gender.

Results and discussions

Three most-frequently-appeared sense-descriptive adjectives of the lily scent (Q1) were 'gentle', 'sweet' and 'elegant'. The subjective appraisals (Q2-Q10) indicated that the lily scent enhanced the activity of parasympathetic nerves (Fig. 1). The results indicated that the scent of the sacred flower, *L. japonicum* has relaxation effects on human.

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References

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Suggested physiological effects of the scent of *Lilium japonicum*

Subjective appraisal	Mark	Physiological response		psychological response		
		Sympathetic nerve	Parasympathetic nerve	affirmative	contra diction	rest
Depression or Dejection (Q4)	Low		O	O		
Anger or Hospitality (Q5)	Low		O	O		
Tension or Anxiety (Q7)	Low		O	O		
Vigor or Activity (Q8)	High	O		O		
Fatigue or Inertia (Q9)	Low		O	O		
Confusion or Bewilderment (Q10)	Low		O	O		
Others						
Preference (Q2)	High		O	O		
Happiness (Q3)	Mid	△	△	△		
Calmness (Q6)	high		O			O

Questionnaire

- Q 1 . Please described the impression of this flower's scent in a few words.
 Q 2 . You like the scent.
 Q 3 . This scent makes you happy.
 Q 4 . This scent makes you depressed.
 Q 5 . This scent makes you irritated.
 Q 6 . This scent makes you feel calm/relaxed.
 Q 7 . This scent makes you feel nervous/anxious.
 Q 8 . This scent refresh you.
 Q 9 . This scent makes you tired.
 Q 1 0 . This scent makes you feel confused.

Fig. 1 The suggested physiological effects of the lily scent.