EXPO 2022 AMSTERDAM - ALMERE NL FLORIADE

JAPAN satoyama OFFICIAL PARTICIPANT

Introducting the latest technology and research in Japan

Physiological Relaxation Effects of Flower

INTRODUCTION

Evolution	Industrial Revolution	COVID-19
6-7 million years 99.996% (Natural Environment)	2-300 years 0.004% (Urban)	2 years 0.00003% (Home Office)

R. Gallmann and Y. Miyazaki, Hiking therapy (*in German*), Weber Verlag, 2022

Humans have been living in a natural environment for 6–7 million years

➡ **Human bodies are made for the natural environment**

Industrial Revolution & COVID-19

➡ **Stressful conditions in urban life**

Expectations for nature therapy: flowers, parks, forests, etc.

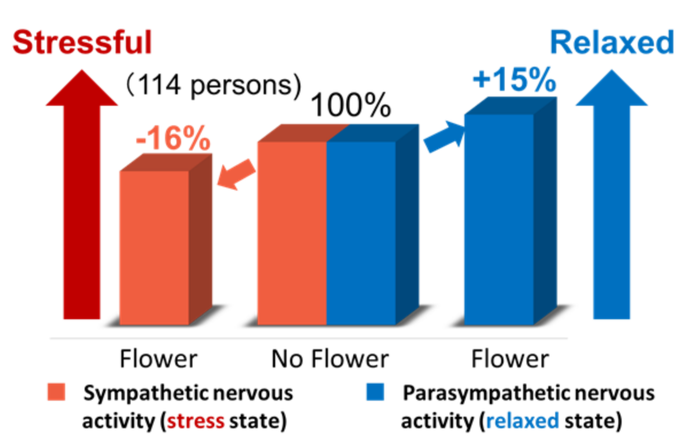
➡ **Physiological Relaxation Effects of Flower**

More detail

① Visual stimulation experiments

Physiological relaxation effect of fresh pink roses

More detail

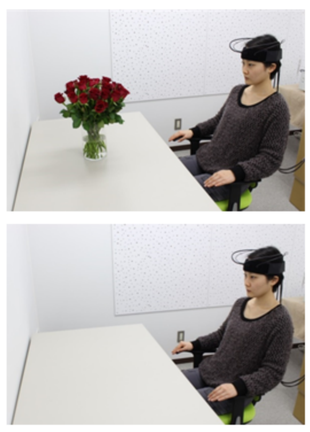


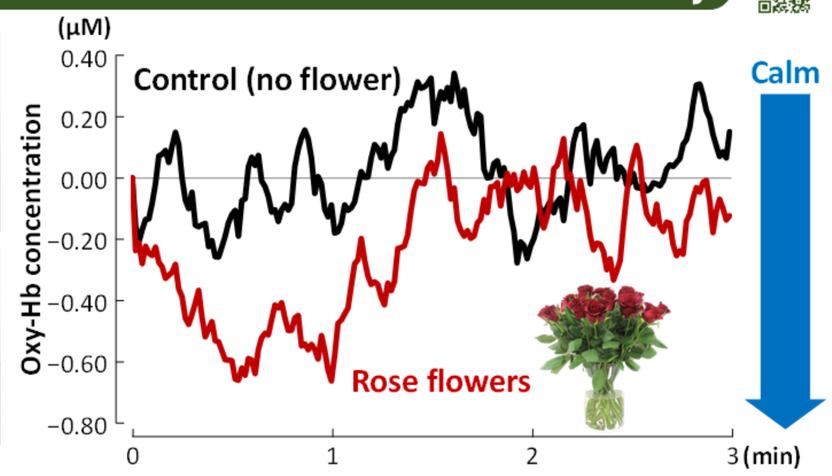
H. Ikei et al., *J Physiol Anthropol* 33, 6 (2014) (2 other papers *in Japanese*)

Fresh roses ➡ **Sympathetic nerve activity ⬇ Parasympathetic nerve activity ⬆** ➡ **Physiological relaxation effect**

Calming effect of fresh red roses on brain activity

More detail





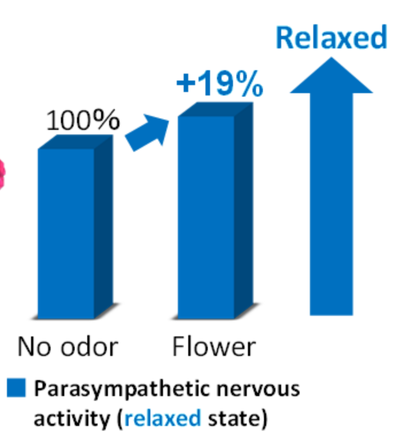
C. Song et al., *Complement Ther Med* 35, 78–84 (2017)

Fresh roses ➡ **Prefrontal oxygenated hemoglobin concentration ⬇** ➡ **Calming of the prefrontal cortex activity**

② Olfactory stimulation experiments

Physiological relaxation effect of fresh roses

More detail

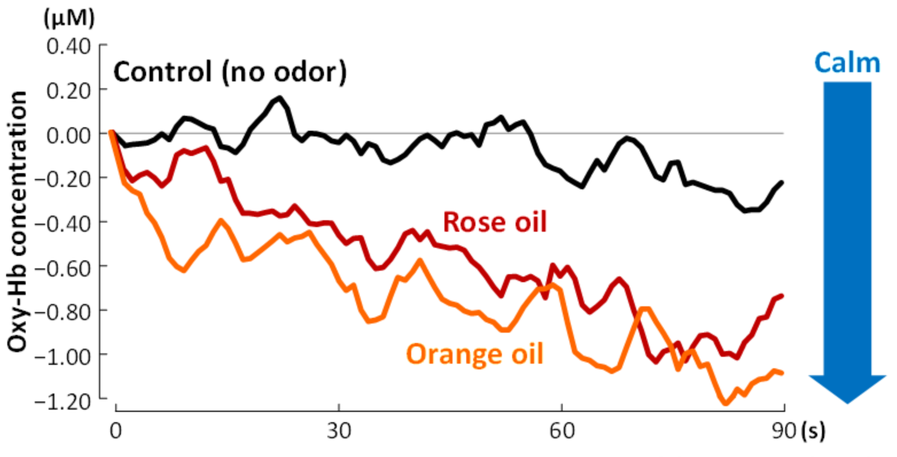


M. Igarashi et al., *J Altern Complement Med* 20(9):727–731 (2014)

Fresh roses ➡ **Parasympathetic nerve activity ⬆** ➡ **Physiological relaxation effect**

Calming effect of rose essential oil on brain activity

More detail



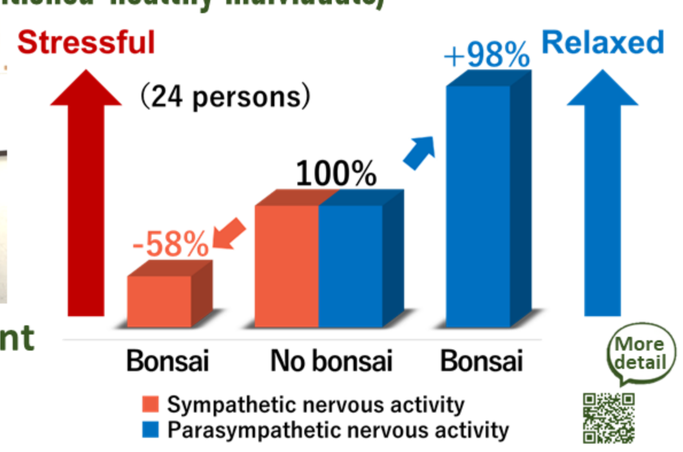
M. Igarashi et al., *Complement Ther Med* 22(6):1027–1031 (2014)

Fresh roses ➡ **Prefrontal oxygenated hemoglobin concentration ⬇** ➡ **Calming of the prefrontal cortex activity**

Conclusion and Future Prospects

Strong physiological relaxation effect of bonsai on highly stressed individuals (Compared with the aforementioned healthy individuals)

Bonsai visual experiment conducted on a spinal cord injury wheelchair users



H. Ochiai et al., *Int J Environ Res Public Health* 14(9):1017 (2017)

Conclusion

1) Calming of the prefrontal cortex activity
2) Increased parasympathetic activity, which is heightened during relaxation

➡ **Physiological relaxation of the brain and body**

Future Prospects

The strong relaxing effect of nature therapy on high-stress individuals (e.g., wheelchair users, gamblers, and elderly rehabilitation patients) More detail

➡ **Stress reduction effects of nature therapy on children with developmental disabilities**

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