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ABSTRACTS

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Improvement of liver function using extracts of Korean raisin tree (*Hovenia dulcis* var. *koreana* Nakai). Kim, S.H., Na, C. S., Lee, K.Y., Han, J.G. (*Korea Forest Research Institute, Republic of Korea; goldtree@forest.go.kr; spectreena@hanmail.net; leeky99@forest.go.kr; stationair@forest.go.kr*).

Korean raisin tree (*Hovenia dulcis* var. *koreana* Nakai), which is widely distributed in Korea, China and Japan, has shown to improve liver function and to reduce the acute alcohol toxicity. In this study, the improvement effect of the peduncle extracts on liver function was investigated through the chemically induced experimental liver injury models as well as the alcohol-administered animal models. HdfHW-1, HdfM-1 and HdbrM-1 which are the extracts of fruit and young branches with hot water, 70% methanol and 100% methanol, were significantly reduced the CCl_4 or D-galactosamine/LPS-induced damages on the sliced liver. The hot water or methanol extracts from fruit peduncles protected the primary hepatocyte culture against CCl_4-induced toxicity in a dose-dependent manner. Moreover, the released amount of LDH was reduced to the control level at 500μg/Mℓ 5 of hot water extracts. HdfHW-1 also decreased the CCl_4-induced hepatotoxicity in rats. The active components of HdfHW-1 seemed to contain high molecular weight substances because 0.2M NaC1 HdfHW-1 fraction was the most effective among NaCl fractions of through DEAE 650C column chromatography. HdfM and HdfHW also significantly reduced the levels of blood alcohol in both rats and mice, which were previously administered with 40% alcohol.

Forestry biodiversity and well-being: on-site experiences in urban areas in Italy. Lafortezza, R., Sanesi, G., Colangelo, G. (*University of Bari, Italy; r.lafortezza@agr.uniba.it; sanesi@agr.uniba.it; giu.colangelo@gmail.com*), Carrus, G. (*University of Roma 3, Italy; g.carrus@uniroma3.it*), Ferrini, F., Salbitano, F. (*University of Florence, Italy; francesco.ferrini@unifi.it; fabio.salbitano@unifi.it*), Semenzato, P. (*University of Padoa, Italy; paolo.semenzato@unipd.it*).

In this study, we selected five types of urban green spaces in Italy, ranging from a minimum of biodiversity and a maximum of man-made elements to a maximum of biodiversity and a minimum of man-made elements. A convenience sample (N = 125) was contacted in the city of Padua, Florence, Rome, Bari. A questionnaire focusing on people's experiences in the environment (length and frequency of visits, activities performed, perceived restorativeness, affective qualities of the place, perceived well-being during and after the visits) was administered. Results showed that the perceived restorative properties are higher in the peri-urban green areas, and significantly increasing as a function of biodiversity levels in the environment. Moreover, the activities performed in the environment impacted both perceived restorativeness and respondents' well-being. Finally, frequency and duration of visits positively predicted self-reported well-being. As expected, a significant mediating role of both perceived restorativeness and affective qualities upon the relationship between duration and frequency of visits and individual well-being was detected. The theoretical implications in the analysis of the process leading to restoration are discussed, and potential guidelines for a more healthy management of everyday urban and peri-urban natural environments are envisaged.

The influence of forest scenes on psychophysiological responses. Lee, J.H., Shin, W.S., Yeoun, P.S. (*Chungbuk National University, Republic of Korea; qudgh1012@nate.com*).

Viewing or contacting with forest provides restoration from daily stress or fatigue. This study examined the effect of urban scenes and several types of forest biomes on psychophysiological responses of human body. The overall purpose of this study was to examine which specific forest settings evoke the most positive reactions in people. The experiment was performed with 30 subjects who were university students. The subjects were exposed to 27 types of scenery (for 10 seconds each). ANOVA tests and post hoc comparisons using setting scores across the participants' data on the responses to the 27 biome slides regarding scenic beauty, preference, Perceived Restorativeness Scales (PRS) and alpha wave (brain wave) were performed. The results of data analysis showed that the subjects preferred forest sceneries to urban sceneries. The results also indicated that scenery with forest and water was the most favored and evoked the highest level of psychophysiological responses to the subjects. These findings support the biophilia hypothesis and provide some evidence toward the restorative benefits of forest environments. Findings are discussed in relation to psychological research in forest therapy.

Health-related benefits of forest stimulation based on indoor experiments. Lee, J.Y., Park, B.J. (*Chiba University, Japan; juyoung@graduate.chiba-u.jp; bjpark@faculty.chiba-u.jp*), Tsunetsugu, Y. (*Forestry and Forest Products Research Institute, Japan; yukot@ffpri.affrc.go.jp*), Miyazaki, Y. (*Chiba University, Japan; ymiyazaki@faculty.chiba-u.jp*).

With growing interest in the therapeutic effects of forest environments, there have been great needs for scientific evidence of these effects. Therefore, this study aimed to elucidate the physiological benefits of forest-related stimulation through laboratory experiments. Sensory information was input via the five senses (vision, olfaction, etc.), and it was attempted to clarify the physiological reactivity to each stimulation. The tests were carried out in a room with a controlled setting. Subjects were young male students. Cerebral and autonomic nervous activities were measured using near infrared spectroscopy of the prefrontal area and blood pressure, respectively. For the forest-related stimulations, forest scenery was used for vision, the smell of cedar chips for olfactory, the sound of streams for audition, and the taste of cedar barrel-aged whisky for taste sensation. The results showed that viewing the forest scenery, smelling cedar chips and listening to the sound of streams caused significant reductions in prefrontal area activity and blood pressure. Also, tasting cedar barrel-stored whisky suppressed the increase of prefrontal area activity and systolic blood pressure was induced significantly by whisky alone. In conclusion, this study provided scientific data supporting the idea that forest-related stimulation has positive effects in terms of physiological relaxation.

Physiological relaxation produced by horticultural activity. Lee, M.S., Park, K.T., Lee, J., Park, B.J. (*Chiba University, Japan; lmsid26@gmail.com; forever8312@gmail.com; juyoung@graduate.chiba-u.jp; bjpark@faculty.chiba-u.jp*), Ku, J.H., Lee, J.W., Oh, K.O., An, K.W. (*Chonnam National University, Korea; kuja99@cnu.ac.kr; jwlee@cnu.ac.kr; ohkok@cnu.ac.kr; kiwan@jnu.ac.kr*), Miyazaki, Y. (*Chiba University, Japan; ymiyazaki@faculty.chiba-u.jp*).

The aim of this study was to determine physiological effects of horticultural activity. A first experiment compared the physiological effects of transplanting flowers (*Chrysanthemum morifolium*) for 15 minutes and transplanting artificial flowers for 15 minutes. A second experiment compared the effects of transplanting foliage plants (*Peperomia angula*) for 15 minutes and