다. 소나무 화분의 세탈액은 겹달맞이꽃, 상추, 비름, 벌노랑이, 망초 종자의 발아와 유근의 생장에 억제작용을 하는 것으로 나타났다. 소나무 화분의 세탈액을 1.25, 6, 24, 96 mg / 2.5 ml의 서로 다른 농도로 처리한 후 5일간 배양하여 관찰한 결과 가장 높은 농도에서 망초 25%, 겹달맞이꽃과 상추는 21%, 비름 46%, 벌노랑이 20%정도 발아가 억제되었고 유근의 길이를 측정한 결과 겹달이꽃과 상추는 40%, 망초 30%, 비름 73%, 벌노랑이 64%가 억제되었다. 결과적으로 소나무 화분의 분산은 산림생태계에 중요한 영양원으로 작용하고 호상균에 의해 분해되어지며 잠재적으로 경쟁식물들에게는 알레로파시 효과가 있는 것으로 나타났다.

B513

서양등골나물(*Eupatorium rugosum* HOUTT.)의 생물계절학적 연구

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귀화식물인 서양등골나물의 생물계절학적 연구를 위해 서울 남산에서 남사면의 소나무 식재림 (침엽수림)과 북사면의 신갈나무림 (활엽수림)에서 각각 60 m C 3m의 대상 (transect)을 설치하여 발아, 생장, 개화의 과정을 모니터링하였다. 서양등골나물의 발아시기는 4월 중순부터 5월 하순까지였으며, 발아의 최성기는 침엽수림에서 5월 초순, 활엽수림에서는 4월 하순이었다. 줄기의 높이 변화를 측정한 생장률은 발아 후 5월 초순까지 상대적으로 높았으나 (0.08-0.13), 이후 점차 낮아져 6월 중순부터는 상대적으로 낮은 생장률 (0.01 이하)을 유지하였으며, 생장률 최성기 때의 침엽수림에서의 생장률은 활엽수림에 비해 높았다. 대상 내의 라메트는 줄기수가 1개인 것부터 최대 23개까지 구성되어 있었으며, 1개부터 3개까지의 줄기로 구성된 라메트가 전체의 50% 이상을 차지하였다. 개화시기는 9월 중순 이후부터였고, 상대적으로 키가 큰 줄기가 보다 이른 시기에 개화하는 경향을 보였다. 침엽수림에서는 활엽수림에 비해 발아 최성기는 2주일 정도 늦었으나 생장률은 상대적으로 높았으며, 라메트를 구성하는 줄기의 수도 비교적 다양하였다.

B514

Movement Behavior and Physiological Response of Medaka (*Oryzias latipes*) after Treated with Carbofuran in a Sublethal Concentration

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The response behavior of medaka (*Oryzias latipes*) was continuously observed in individuals for 2 days through an automatic image recognition system after Carbofuran, an anticholinesterase insecticide, was treated at a sublethal concentration, 0.1 mg/L, in an aquarium. Although some variations occured in different specimens, it was possible to observe characteristic patterns of the locomotive tracks in the treated individuals. The locomotive trakcs of the individuals without insecticide treatment were in general smooth and linear, and usually spanned a large area of the aquarium. After being treated with Carbofuran, the treated individuals showed different patterns such as the movements of "saw-teeth", "nipping-and-burst", and "down-and-back up". The response behavior appeared around 30 minutes after the treatment of Carbofuran. The investigations on physiological response regarding cholinesterase activity in the tested specimens were also conducted, and the decrease in the enzyme activity in the head and body was observed and coincided with the occurence of response behavior of the

treated individuals. The results suggested that the movement-recognition system could be an alternative tool for monitoring chemicals in the environment through movement behavior of indicator species.

B515

Antifungal Activities of Aqueous Extracts from Three *Quercus* Plants

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The antifungal activities of aqueous extracts of three *Quercus* on selected fungi such as *Alternaria mali, Aspergillus* var. *brunneus, Fusarium avenaeum,* and *Pyricularia oryzae* were investigated. The radial extension method was performed for the filamentous fungi. Colony diameters were measured grown for 5 days after inoculation. The strongest antifungal activity was shown in aqueous extract of *Q. aliena*. While the antifungal activity of *Q. dentata* was very specific that observed mycelial growth without sporulation. The aqueous extract of *Q. serrata* resented weak or none antifungal activity. In this test, inhibitory effect on receptor fungi was shown *Q. aliena, Q. dentata,* and *Q. serrata* in order. As a results of different fractionation experiment among EtOAc, H_2O, MeOH, the H_2O fraction only represented antifungal effect.

B516

Vegetation Structure and Soil Environments of Floodplain Wetlands in the Depositional Zone of the Han River

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Vegetation is an important and highly variable element in the stream corridor. The distribution of riparian plant communities would be based on different hydrologic and soil conditions. Characteristics of vegetation and soils in floodplain wetlands of the Han River were studied in Hanam City, Kyunggi-do. The floodplain was seasonally inundated and included features such as floodplain woodland, slough, emergent marsh and wet meadow. The *Salix* communities was well developed in the floodplain woodland. In the slough, various community types such as submerged aquatic beds of *Hydrilla verticillata, Myriophyllum spicatum* and *Potamogeton octandrus,* and free-floating plant of *Trapa japonica.* The emergent marsh included communities of *Phragmites australis, Scirpus radicans,* and *Typha angustifolia.* In wet meadow of the floodplain, communities of *Miscanthus sacchariflorus, Phalaris arundinacea,* and *Artemisia selengensis* were widely distributed. The detrended correspondence canonical analysis showed that the plant community associated with floodplains at the different structural features might vary due to differences in water table, soil particle size, and nutrient availability. We proposed the establishment of natural preserve for the conservation of these diverse plant communities which develop themselves in the deep, rich alluvial soils of the floodplain.

B517

가죽나무의 allelochemicals가 종자발아, 유식물생장 및 항균력에 미치는 영향

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