Characterization of airborne bioaerosol concentration at the apartment in chungnam area

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ABSTRACT

This research was performed to measure the concentration distribution of Bioaero sol in apartment houses in the region of Chungnam (Chunan, Asan) for 1 month, December, 2004. The results are as follows.

Key Words : bioaerosol, apartment, microbe, fungus,

1. By using SA method, the average concentration of total microbe and fungus in the air inside and outside apartment house below 4 years are 69,42cfu/㎥ and 15.66cfu/㎥, while apartment house over 4 years, 214.58cfu/㎥ and 216.43cfu/㎥, respectively. With gravitational sedimentation method, the average concentration of total microbe and fungus of apartment house below 4 years are 100.63cfu/㎥ and 22.83cfu/㎥, while apartment house over 4 years, 216.43cfu/㎥ and 70.00cfu/㎥, respectively.

2. The I/O ratio of floating germ of apartment house below 4 years and over 4 years are 2.87 and 5.12 for total microbe, and 3.32 and 8.28 for fungus, respectively. The I/O ratio of falling germ of apartment house below 4 years and over 4 years are 1.55 and 2.81 for total microbe, and 2.85 and 4.08 for fungus, respectively. The apartment house below 4 years shows a low I/O ratio in all cases.

3. The difference in concentration of microbe between inside master bedroom and living room of apartment house below 4 years is 13.183cfu/m³, total microbe, and 4.787cfu/m³, fungus, while, apartment house over 4 years, 43.531cfu/m³, total microbe, and 21.932cfu/m³, fungus. The measured differences are statistically significant.

4. Air sampler was used to verify the difference in concentration of microbe with the age of apartment house. The difference in concentration of total microbe and fungus for outside apartment house below 4 years and over 4 years are 49.82cfu/m³ and 3.78cfu/m³, respectively. The difference of inside living room shows 160.23cfu/m³ for total microbe and 28.01cfu/m³ for fungus, and the difference of inside master bedroom shows 225.43cfu/m³ for total microbe and 56.73cfu/m³ for fungus. The differences are statistically significant. The difference in concentration of outside apartment house below 4 years and over 4 years are 34.66cfu/m³, total microbe, and 15.66cfu/m³, fungus, while inside apartment house below 4 years and over 4 years, 196.93cfu/m³, and 78.67cfu/m³, respectively. The measured differences are statistically significant.