

Determinants of House Dust, Endotoxin, and β -(1 \rightarrow 3)-D-Glucan in Homes of Turkish Children

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Abstract : We aimed to study the association between house dust endotoxin, β -(1 \rightarrow 3)-D-glucan, and asthma in a sample representative of the Turkish population. We analyzed data from 240 participants. The house dust was collected from the homes of 110 asthmatics and 130 control (without asthma) school-aged children (6-11 years old). House dust from the living room and from bedroom floors were analyzed for endotoxin and beta-glucan contents. House dust was analyzed for endotoxin content by the kinetic limulus amoebocyte lysate assay and for β -(1 \rightarrow 3)-D-glucan by the inhibition enzyme immunoassay. The parents answered questions regarding potential determinants. We found geometric means 187.5 mg/m² for dust. According to statistical values, the endotoxin geometric mean was 13.86 \times 10³ EU/g for the control group and 6.16 \times 10³ EU/g for the asthma group. As a result, the amount of bacterial endotoxin was measured at a higher level in the homes of children without asthma. The geometric mean for beta-glucan was 46.52 μ g/g and 44.39 μ g/g for asthma and control groups, respectively. No associations between asthma and microbial agents were observed in Turkish children. High correlations ($r > 0.75$) were found between floor dust and endotoxin loads, while endotoxin and β -(1 \rightarrow 3)-D-glucan concentrations were not correlated. The type of flooring (hard-surface or textile) was the strongest determinant for loads of floor dust and concentrations of endotoxin. Water damage and dampness at home were determinants of β -(1 \rightarrow 3)-D-glucan concentrations. Endotoxin and β -(1 \rightarrow 3)-D-glucan concentrations in Turkish house dust might lower than concentrations seen in other European countries.

Keywords : indoor air quality, asthma, microbial pollutants, case-control

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