

# ZERTIFIKAT · CERTIFICATE



## **DARTSCH SCIENTIFIC GMBH** Institute of Cell Biological Test Systems

herewith certifies that the product named

### **E-Liquid of the brand Happy Liquid „Apfel“ with 6 mg/ml nicotine**

manufactured and distributed by

**Happy People GmbH, D-80337 München, Germany**

has been tested for its toxic effects after long-term exposure by using  
*in vitro* tests with cultured human lung cells.

#### **Results of the Test Assays**

The investigations with cultured human lung cells (cell line A549) have shown that vaping of the e-liquid did not cause a significant decrease in cell vitality in comparison to untreated controls at test concentrations up to 10 vol% of the primary extract and a continuous exposure period of 12 days. In contrast, tobacco smoke caused death of nearly all cultured lung cells at considerably lower test concentrations. Thus, the investigations with long-term exposure demonstrate that vaping of the e-liquid “Apfel” of the brand Happy Liquid with 6 mg/ml nicotine has a much lower toxic effect on cultured lung cells than tobacco smoke.

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