

Germany

Forthcoming research on smoke evaluation

The research and development division of laboratory and production line equipment manufacturer Burghart is to employ a new technique in the evaluation of cigarette mainstream smoke measurement and toxicological data concerning the effects of tobacco on humans.

Instead of using the traditional methods for cytotoxic in vitro experiment of cigarette mainstream smoke measurement, which employ either the cigarette smoke (CS) condensate test, or the aqueous extracts of CS gas vapour phase (or total CS) treatment, their new MSB-01 unit has been designed to simulate natural human smoking behavior.

The laboratory device, prepared for uniform cigarette diameter, uses one cigarette per smoking process. The smoke aerosol chamber is a sealed chamber; the cigarette mainstream smoke and diluting air are drawn into the chamber.

An electronic pump piston controls the cigarette smoke process and pumps the diluting air as well. The dilution of the mainstream is performed in the piston syringe, the piston controls the inter-puffing dilution and the air-flow to simulate human smoke behavior.

A stainless steel slide releases the row of wells to expose the cells to the CS aerosol sequentially during the experiment. A standard 96-microwell plate is used in this experiment for fast and cost efficient operation, although other containers are also possible.

The smoke guide just covers the micro well plate to guarantee the same volume of smoke is puffed to the wells. There are

three holes on the top of each well. The bigger hole puffs the mainstream smoke and the two smaller holes draw out the residual smoke.

All the operating parameters, such as puff volume, smoke dilution, and so on, are set by PC.

The micro well plate with pre-culture adherent cells is placed on the bottom of the chamber, covered by the smoke guide. One cigarette is put on the pump and lit. The various inter-puff dilution and air-flow are operated according to the settings of the PC. The smoke puffs to the cells directly through the smoke guide; the slide exposes rows of cells to the CS aerosol sequentially following the presetting parameter to ensure the smoke dose for each row of wells is different.

The smoke aerosol chamber is equipped with two pipes to draw out the residual smoke avoiding the contamination of smoke condensate.



Burghart's MSB-01 simulates natural human smoking behavior

Burghart 的 MSB-01 模拟自然人吸烟的行为。