

Shair, a healthier way to enjoy your shisha or cigarette*

Introduction

Shisha is just one name of many (i.e. narghile, hookah) used in different parts of the world for water pipes. There are even more models and types of shishas than names, but the main parts and working principle are the same. On top is the head or tobacco bowl, usually made from earthenware or potter's clay, holding the tobacco. Underneath is the body and water bowl, which can be made from different materials (i.e. metal, glass).

Attached to the water bowl is a hose with mouthpiece (figure1).

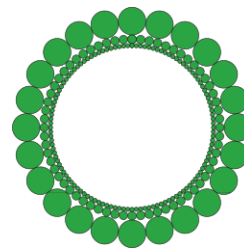
After the water bowl has been half-filled with water and everything is connected, the head is filled with shisha tobacco and covered with a permeable screen on which charcoal or related coal-like materials are placed and ignited. If the user inhales, air is heated up by the coal and the tobacco is (partially) burned releasing aromas, nicotine, tar-like components and a multitude of other components. This smoke is passing through the shisha body, bubbling through the water and passing the hose and mouthpiece to reach the user.

Traditionally and nowadays waterpipe smoking has been and is a very social happening, often practiced in cafes or restaurants or at home with family, friends and guests. In many countries and cultures it is deeply rooted and part of daily life.

One of the most spread myths about shisha smoking is that it is a healthier way of smoking compared to cigarettes and cigars, for example. This is a very wrong assumption, on the contrary, there are much more hazardous components (in numbers and amount) present in shisha smoke than in cigarette/cigar smoke. Many studies have been conducted on the relation of health and regular shisha use and all state the same: 'regular shisha use leads to worse health, higher risk of various cancers and other diseases, like periodontal disease.' Thus, although shisha smoking is a very social and tasty happening, it also poses a serious threat to health.



Figure 1: A typical waterpipe/shisha.



Present-day devices for reduction of hazardous components

There are devices and accessories available, claiming to reduce the harmfulness of the shisha smoke, however, any proof is not presented. Comparative own research has shown that only a very limited reduction of the harmful components could be measured.

These devices are adapted mouthpieces containing activated carbon, inorganic-based materials or cotton. Alternatively, chemical additives for the water are available. Very common in the middle and near east are single-use plastic hoses. As already mentioned none of these accessories have reported real proof on their functionality.

Also for these products is shown in comparative research that only very limited reduction of the harmful components is reached.

The new Shair filter

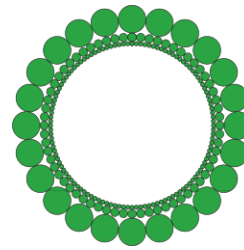
Due to the fact that there are limited and only non-proven accessories available on the market for the reduction of dangerous smoking components, was the reason for RMC Trading BV and Cobra Technologies BV to develop the Shair filter.

The Shair filter was developed and designed to reduce significantly the inhalation of hazardous tar components, which are the main causes for tongue and respiratory system cancer. At the same time it should maintain the flavor and pleasant experience, including the social aspect, during smoking of shishas and cigarettes.

The filter material is a non-hazardous inorganic-based material which adsorbs the carcinogenic tar components. Single use is recommended for shishas, because the average amount of tar-like components coming of the tobacco in a single shisha smoking session is 40-70 times that of a single cigarette (600 mg on average) [1].



Figure 2: Shair filter



The work for the development of the Shair filter is carried out as a co-operative initiative from RMC Trading BV and Cobra Technologies BV.

In order to shed more light on the function of the most commonly used devices for the reduction of hazardous smoke components and the Shair filter, the function of those commercial available devices were analyzed and characterized. Based on the outcome of that study the outline, targets and parameters for a new device were determined.

One of the main targets of the development of the Shair-filter was to remove about 75 % of the heavier tar-like components, which represents a significant reduction of health-hazards of water pipe smoking, meanwhile retaining the shisha smoking experience.

After a year of hard work in development, testing and field testing the necessary data was obtained and the Shair filter accordingly designed.

Shisha tests:

For comparison with the new Shair filter, three types of 'hazard-reducing' devices have been tested under controlled laboratory environment. The amount of tar-like condensates remaining in the devices was gravimetrically analyzed.

- | | |
|---|--------------------|
| a) Type 1: Single-use rubber hose: | efficiency < 2 % |
| b) Type 2: Single-use rubber hose, ruffled: | efficiency 5-10 % |
| c) Type 3: Inorganic-based filter material: | efficiency 10-20 % |

Shair filter can approach **80 %** of removal of the tar-like condensates in a single shisha session, which has been proven repeatedly by controlled lab tests and user tests. On average 600 mg of tar-like condensates are inhaled during one shisha session [1]. The filters remove between 360-480 mg of the condensates.

The user tests were conducted in different groups at different locations (i.e. shisha café, shisha lounge), the groups consisted of 2-6 people. The experiences of these smoking sessions during the duration of the development were taken into account for improvements of the Shair filter, because after all the happy social smokers will decide upon the success of this superior new product.

Our test shisha smokers reported that the smoking experience didn't change as compared to a smoking session without the filter. Most of them even noticed less irritation to the respiratory system.

Shisha use:

The filter can be used in two ways as depicted on **figure 3**:

- Placed between water bowl and hose
- Placed as mouthpiece

If used as a mouthpiece it should not be passed around to other persons in order to avoid the potential transfer of infections.

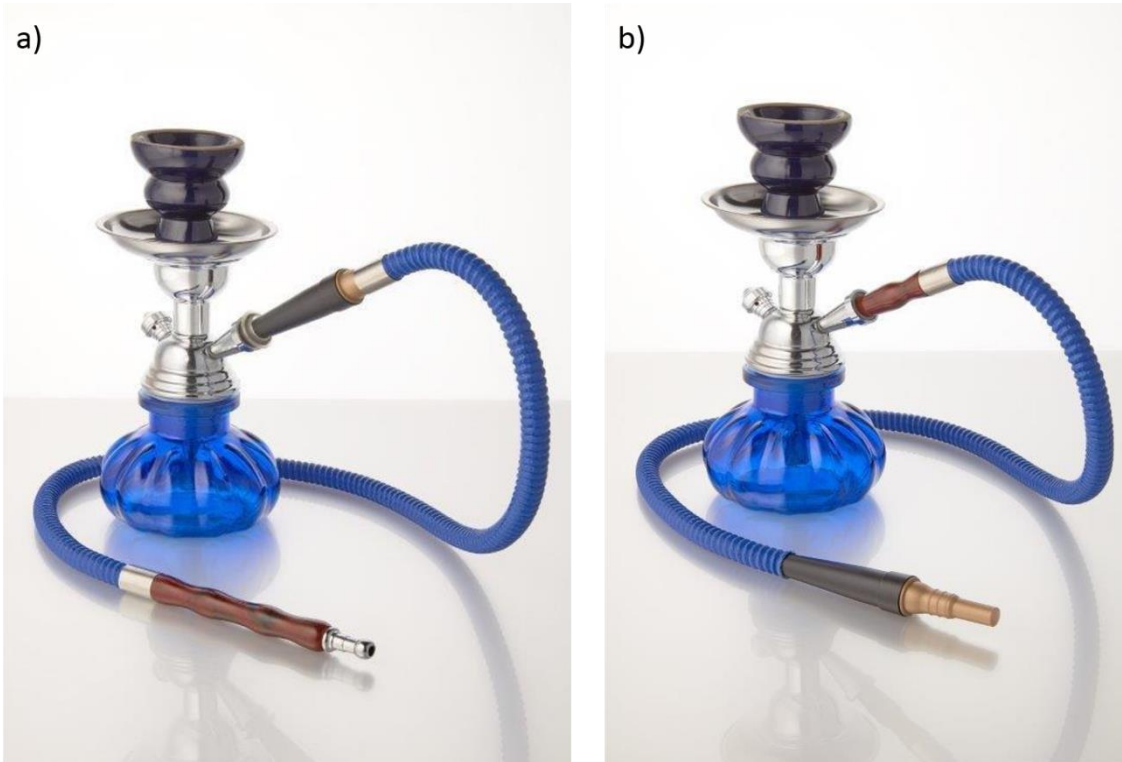
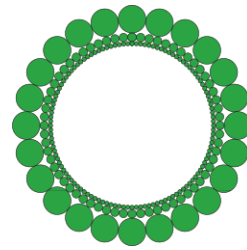


Figure 3: Shair filter can be placed in two positions, a) between water bowl and hose, b) as mouthpiece.

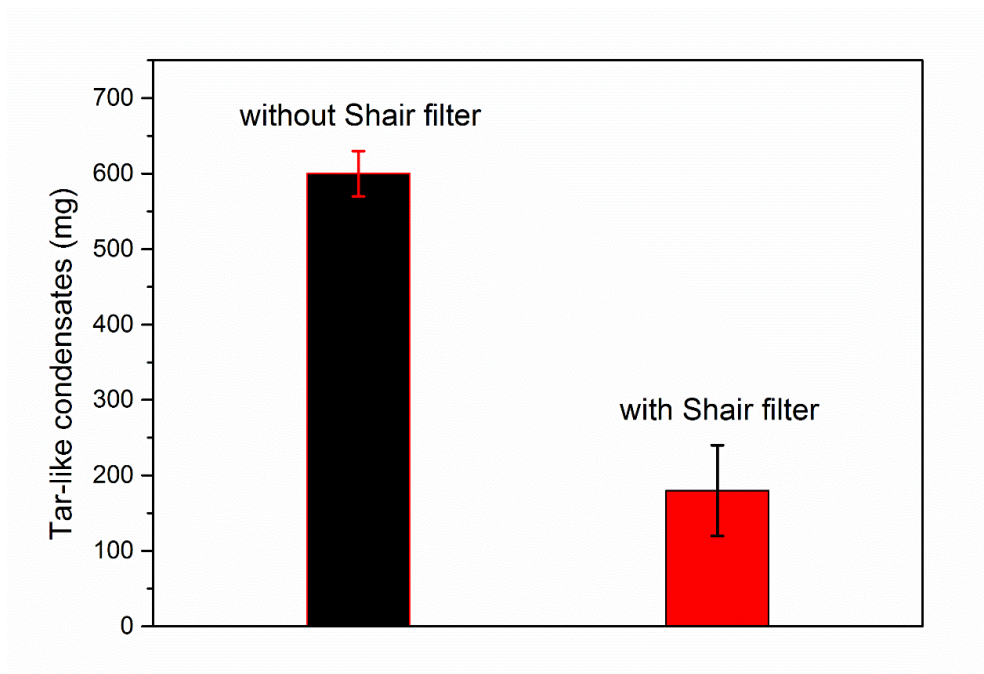


Diagram 1: Amount tar-like condensates inhaled during one shisha session with and without filter.



Cigarette use:

The cigarette has to be placed in the black colored part of the filter as depicted in **figure 4**.



Figure 4: Filter use for cigarettes.

Shair removes a substantial amount of the tar-like condensates coming off from cigarettes. The users noticed no change in taste of the cigarettes until the filter is full. After the consumption of about 40 cigarettes the filter reaches its maximum capacity and has to be replaced.

By choosing to use Shair filters you can enjoy smoking tobacco the way you like it and at the same time reduce the risk for cancer and other smoking related diseases*.

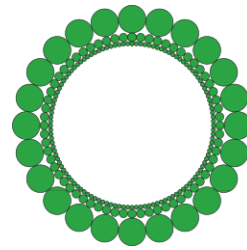
***Waiver:**

Shair doesn't remove all tar-like components. Mainly the most hazardous heavy components are removed from the smoke, nevertheless, smoking with the use of Shair filter may still cause diseases, like lung, tongue, and throat cancer etc.

Cobra Technologies BV and RMC Trading BV are in no way responsible or liable for the use of water pipes and cigarettes with or without Shair filter.

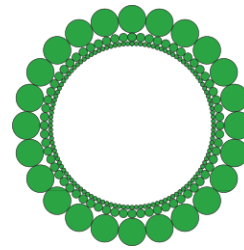
[1] WHO advisory note: water pipe tobacco smoking: health effects, research needs and recommended actions by regulators – 2nd ed.; ISBN 978 92 4 150846 9

RMC Trading BV – COBRA



For informative reasons the Shair report was send to:

WHO	World Health Organisation	
BfR	Bundesinstitut für Risikobewertung	Germany
EUPHA	European Public Health Association	EU
Centre Anti-tabac		France
Healthcare UK		UK
National Institutes of Health		USA
MoHP	Ministry of Health and Population	Egypt
Ministry of Health		UAE



Shair Filter Certificate.

Analytical procedure to determine removal of tar-like components during waterpipe smoking.

Test method: Gravimetical

Test protocol: Inorganic filter material is dried at 65 °C for 48-72 h, weighted with an analytical balance (0.1 mg accuracy). After filling the filter is placed in the waterpipe. The waterpipe head is filled with waterpipe tobacco (15-16 g), covered with aluminium foil onto which a piece of charcoal is placed. Charcoal is lightened and after it is aglow the test is started. A pump is fulfilling the job of the user. Flow capacity is set to 5-6 l/min with a 10 second on and off interval for 1 h. Afterwards the filter material is dried again at 65 °C for 48-72 h and weighted in order to measure the actual weight gain and adsorbed tar-like components (without water).

Test period: September 2016 – June 2017

Filters tested: 75

Result: The final filter material adsorbed between 360 and 480 mg of tar-like components

Cobra Technologies BV

Rijssen, 01.07.17

A handwritten signature in blue ink, appearing to read 'FM Velterop', written over a diagonal line.

FM Velterop
Managing Director
Cobra Technologies BV