

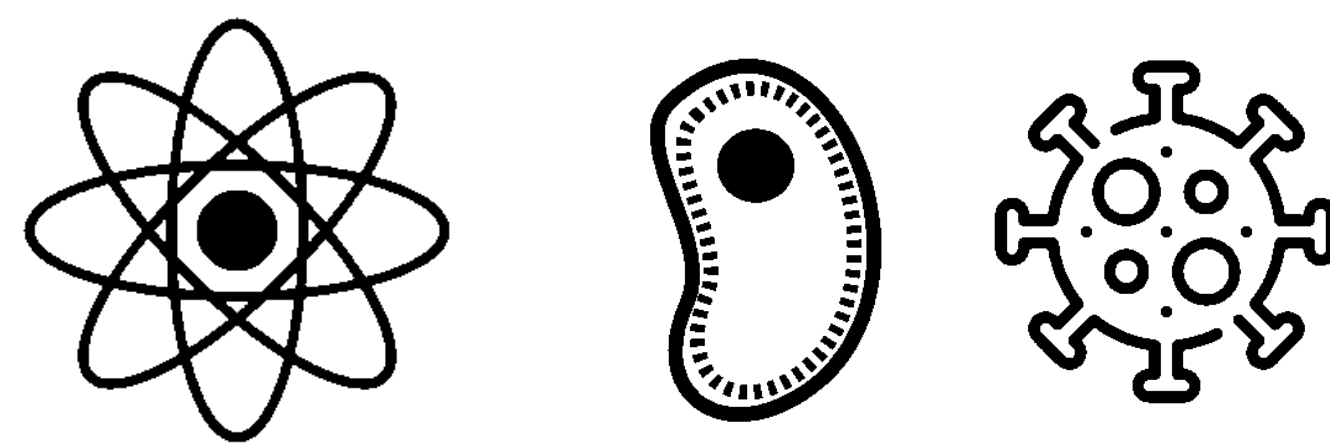
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## BACKGROUND AND IMPORTANCE

### Surgical smoke composition :

- Chemical substances
- Viable cells
- Viral particles (HIV, HBV, HPV)



In the context of the COVID-19 health crisis, several learned societies recommend the use of systems that filter the surgical plume during an invasive procedure, the presence of this virus in the pneumoperitoneum not being excluded.



## AIM AND OBJECTIVES

The objective is to perform a comparative study of existing medical devices (MD) on the market with enough filtration capacity to trap Sars-CoV-2.

## MATERIALS & METHODES

We made a literature review, contacted providers susceptible to market this type of MD, drew a summary table comparing the different characteristics and costs, and finally, analyzed the responses in collaboration with the surgical team, hygiene and the biomedical engineer.

## RESULTS

We have identified two categories of MD. The first can be used in laparotomy : tubing or scalpel connected to suction terminal or a smoke aspirator. The second are intended for laparoscopy. Some of them provide passive filtration. They are filters connected the trocar valve. Others perform active filtration. This is done by means of a tube that is connected on one side to the trocar valve. On the other side, it is connected either to the wall vacuum or to a smoke aspirator or a generator with a dual function: insufflation and aspiration. The price of the consumables varies from 8 to 182 € excluding taxes.

Reference	Provider	Photo	ULPA filter classification	MPPS	EN1822 standard conformity	Viral retention efficiency	Test mono-dispersed or nebulisat	Suction flow (L/min)	Noise level (dB)
LSF1	PALL MEDICAL		U16/U17	0,8 µm	Yes	> 99,999%	Mono-dispersed	/	/
E201290	LANDANGER		U15	0,015 µm	Yes	99,9999%	Nebulisat	/	/
LG-0100	KEBOMED		U15	0,16 µm	Yes	99,99%	Nebulisat	33 L/min	/
BILF150	BUFFALO FILTER		NA	0,1-0,2 µm	No (american standard)	99,9995%	/	/	/
VC220	BUFFALO FILTER		NA	0,1-0,2 µm	No (american standard)	> 99,9995%	/	840 L/min	55 dB
AS-iFS1	AB MEDICA		NA	0,01 µm	Yes	> 99,999%	/	/	/
0620050010	STRYKER		U16/U17	0,051-0,08 µm	Yes	> 99,98 %	Mono-dispersed	/	/
SF35	SYMMETRY SURGICAL		U15	0,1-0,2 µm	No (IEST-RP-CC007.3 standard)	99,999%	Nebulisat	708 L/min	55 dB
IES3	ERBE		U15	0,1 µm	Yes	99,9995%	Mono-dispersed	300 L/min	54 dB
SE3695	MEDTRONIC		U15	0,16 µm	No (IEST-RP-CC0007 standard)	99,9995%	Mono-dispersed	1250 L/min	57 dB
57525317	ATMOS		/	/	/	99,999%	/	700 L/min	55 dB

*No exhaustive list (according to providers' answers).*

## CONCLUSION AND RELEVANCE

A panel of MDs for surgical smoke filtration is available. In order to ensure the safety of operating theatre personnel while controlling costs, we have established a strategy based on the patient's viral status: if the patient is COVID-19 positive, a filtration device with insufflation and aspiration is preferred, while if the patient is only suspected, passive filtration is preferred in order to minimize costs. This is subject to change according to the state of scientific knowledge.