

# Emergency treatment of NRBC victims by needle-free percutaneous administration of antidotes: AGATE Project (Atropine Gun AntidoTE)

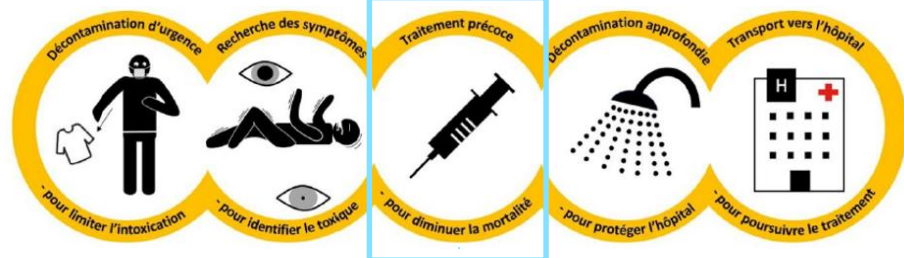
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## CONTEXT AND OBJECTIVES

Patient's care in a NRBC context



Objectives

- ➡ Evaluation of the tissue impact of injection of a dyed solution of Blue Brilliant 0.01%
- ➡ Study of the transcutaneous absorption of a solution of atropine sulfate (1 mg/mL)

## MATERIALS AND METHODS

Visualizing the epidermal inlet and hypodermal outlet impact of a 0.01% Blue Brilliant dye solution



Cutaneous and transcutaneous distribution of a 1 mL solution of atropine sulfate 1 mg/mL injected over 0.1 seconds through a 1.2 cm-thick sample of human skin



## RESULTS

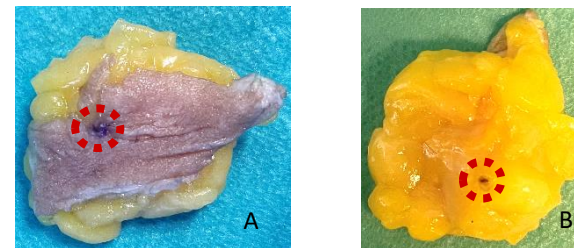


Figure 1: Epidermal inlet (A) (23 G) and hypodermal outlet (B) (17 G) obtained after injection of a 0.01% Blue Brilliant stained solution using the EPIG® device.

Table 1: Study of intracutaneous and transcutaneous bioavailability after injection of atropine sulfate 1 mg/mL into and through a human skin sample.

Properties of the delivery device	Parameters	Bioavailability	
		Intracutaneous	Transcutaneous
<ul style="list-style-type: none"> <li>• 60 mL bottle filled to 10 mL</li> <li>• Injection speed : 1 cm/s</li> <li>• Injection volume : 1000 µL</li> </ul>	Volume	80 µL ± 40 µL (8% ± 4%)	900 µL ± < 1 µL (90% ± 1%)
<b>Whole (epidermis/dermis/subcutis) human skin sample</b> <ul style="list-style-type: none"> <li>• Area &gt; 1 cm<sup>2</sup></li> <li>• Thickness : 1,2 cm</li> <li>• Receiver volume : 10 mL</li> </ul>		Concentration	ND

ND: Not Determined

## DISCUSSION AND CONCLUSION

Currently used in animals, the automated spring needleless injector is a suitable device for the immediate, rapid and effective treatment of patients intoxicated by organophosphates. In a medical emergency context, this device offers considerable advantages in terms of ease of use and rapid injection.