

PRESS RELEASE

La Verpillière, 2nd May 2019

Nemera announces a better drug deposition with RetroNose to enhance therapeutic efficacy of nasal treatments

After announcing a partnership with the Research Center for Respiratory Diseases (CEPR) of Inserm/University of Tours in April 2017, Nemera is happy to publish enhanced drug deposition results compared to classic nasal sprays with RetroNose.

"There is no limit to Nemera's ambition to serve patients. We already market devices in over 40 countries for millions of users. We'll keep investing in new products and in state-of-the-art manufacturing equipment, to help even more patients with high quality devices all over the world."

Marc Haemel, CEO

The number of applications through the nasal route is expanding, either for local treatments (e.g. chronic rhinosinusitis) or for systemic treatments (e.g. migraine, etc.). The clinical efficacy of a nasal treatment depends on how it is deposited in the nose, because the pharmaceutical target (local, systemic, brain) is directly related to a specific nasal anatomical site.

So it is important for device manufacturers like Nemera to support new drug development in that area.

That's why Nemera has collaborated with CEPR to develop a different and portable delivery technology called RetroNose for a better drug deposition in the distal region of the nose, without lung deposition.

Nemera en figures :

- 4 plants in Europe and the USA
- Over:
- 2,100 employees
- 1000 engineers and experts working in our Innovation Center.

What are the main benefits of RetroNose?

- ✓ Improve drug efficacy via a wide and homogeneous deposition
- ✓ Provide enhanced residence time
- ✓ Reduce patient to patient variability
- ✓ Offer the possibility of treatment of the nose and throat in one go with potential therapeutic benefits

As such, RetroNose technology improves the therapeutic effect of local and systemic nasal treatments.

How does it work?

RetroNose uses a breath-actuated pMDI (*Figure 1*) to administer the drug through the buccal cavity during the nasal expiratory phase. The drug particles enter the nasal cavities through the rhinopharynx (*Figure 2*), which has a significant impact on drug deposition profile.

Photos credit Nemera – Document not legally binding

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Figure 1

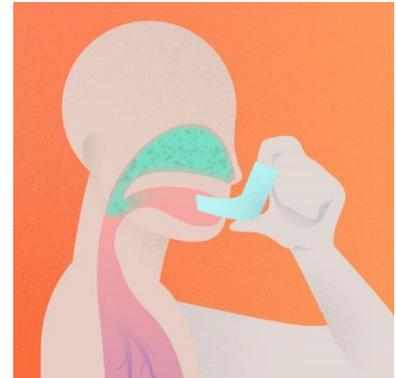
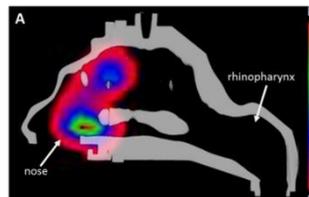


Figure 2

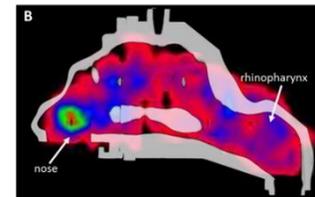
What are the proof of concept results?

First outcomes of this partnership were presented at RDD 2018, to demonstrate the advantages of this technology resulting in an improved particle deposition in an upper airways model for local, vaccine and systemic drugs delivery¹.

Then, during DDL 2018, we showed that Retronose allows a more homogeneous and reproducible deposition in the different target regions of the nasal cavity compared to classic nasal spray in three different nasal cast models (Figure 3)². This should have a positive impact on clinical outcomes for chronic rhinosinusitis patients³.



Local deposition with classical nasal spray



Homogeneous deposition in nasal cavity with Retronose

Figure 3

Furthermore, a recent clinical study has presented data from five cases of asthmatic patients with rhinosinusitis treated with an aerosol therapy exhaled through the nose⁴ using a similar concept. This study proves that administering corticosteroid in the nasal cavity through the mouth is clinically efficient.

This collaboration combines the specific know-how of CEPR and Nemera: CEPR's know-how in respiratory pre-clinical and clinical research, as well as Nemera's experience in development of drug delivery devices.

Nemera will present this concept at RDD conference (table 20), which will take place next week in Lisbon.

Discover Nemera : www.nemera.net

About Nemera

Nemera is a world leader in the design, development and manufacturing of drug delivery devices for the pharmaceutical, biotechnology & generics industries.

Nemera's services and products cover several key delivery routes: Nasal, buccal, auricular (pumps, valves and actuators for sprays), Inhalation (pMDIs, DPIs), Ophthalmic (multi-dose, preservative-free eyedroppers), Dermal and transdermal (airless & atmospheric dispensers), Parenteral (auto-injectors, pens, safety devices & implanters).

Nemera always puts patients first, providing the most comprehensive range of devices in the industry, including off-the-shelf innovative systems, customized design development and customer-owned device manufacturing.

About CEPR

The Research Center for Respiratory Diseases (CEPR) is associated to both Inserm (UMR 1100) and University of Tours. It gathers multi-disciplinaries scientists, physician and pharmacists intending to understand the pathophysiology and develop new strategies to treat respiratory diseases, which still represent unmet medical needs. In particular, CEPR includes a group specialized in the area of drug aerosols for inhalation therapy to treat respiratory diseases, covering the multifaceted aspects of inhalation - formulation, device characterization/optimization, POC and clinical trials.

¹ Le Pennec D, Vecellio L, Regard A, "Nasal Drug Delivery via the Oral Route Using a pMDI". ONdrugDelivery Magazine, Issue 92 (Nov 2018), pp 48-50.

² Vecellio L, Le Pennec D, Grevin G, Regard A, "Deposition in Three Nasal Cast Models Using RetroNose Concept". ONdrugDelivery Magazine, Issue 96 (Apr 2019), pp 42-44.

³ Reychler G, Colbrant C, Huart C, Le Guellec S, Vecellio L, Liistro G, Rombaux P: Effect of three-drug delivery modalities on olfactory function in chronic sinusitis. Laryngoscope. 2015, 125(3): 549-555.

⁴ Kobayashi Y, Yasuba H, Asako M, Yamamoto T, Takano H, Tomoda K, Kanda A, Iwai H. HFA-BDP Metered-Dose Inhaler Exhaled Through the Nose Improves Eosinophilic Chronic Rhinosinusitis With Bronchial Asthma: A Blinded, Placebo-Controlled Study. Front Immunol. 2018. 9, 2192:pp1-8

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