WEIBEL CDS AG

safer, easier and faster drug delivery

A CARTRIDGE-BASED DRUGDELIVERYSYSTEM FOR PUMP SYSTEMS

Cartridge-based drug delivery systems are small and easy to use. As discussed in this article by Ludwig Weibel, Chief Executive Officer, and Hans Peter Manser, Business Director, of Weibel CDS, this system incorporates all the parts needed for a specific drug application into one product. This novel and innovative approach offers patients numerous advantages including saving time and a reduction in needlestick injuries.

Currently, the most familiar use of pump systems is for insulin where such systems are widely accepted. Unfortunately, nearly all systems available today require patients to transfer the drug from a vial, for example, into the pump by using a syringe. Self-medication is heavily dependent on the ability of the patients to prepare and manipulate the injection device. This can be a major issue, especially for elderly patients.

> "Following our mission to support safer, easier and faster preparation and administration of drugs, all functions and parts needed for a specific drug application are integrated into one product."

Following our mission to support safer, easier and faster preparation and administration of drugs, we have integrated all functions and parts needed for a specific drug application into one product – a cartridge-based DrugDeliverySystem. The user only opens one package and the complete handling is done in a closed system in order to reduce contaminations, handling errors and needlestick injuries, combined by a reduction in the time taken to administer the drug.

This system is designed to accept standard 3 mL insulin cartridges. Barely larger than the cartridge itself (Figure 1), the system is extremely small yet still incorporates all functions including a needle insertion system, a unique pump system, a battery, a drive and an electronic control unit.

AUTOMATIC NEEDLE INSERTION

After a purge function, the automatic needle insertion system is launched inserting the steel needle into the tissue. Immediately the steel needle is retracted leaving a soft cannula assuring the highest level of comfort to the patient (Figure 2). The mechanism is engineered to make it impossible to launch the mechanism twice, as the cannula is in a locked position.

UNIQUE PUMP SYSTEM

Not requiring any type of plunger rod, the system is designed to suck out the drug instead of pushing it out. This requires a pump system that is extremely powerful in order to overcome the break-loose forces and allow the rubber stopper to slide smoothly.

Nevertheless, for basal and bolus

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Figure 1: Small yet incorporating all functions.

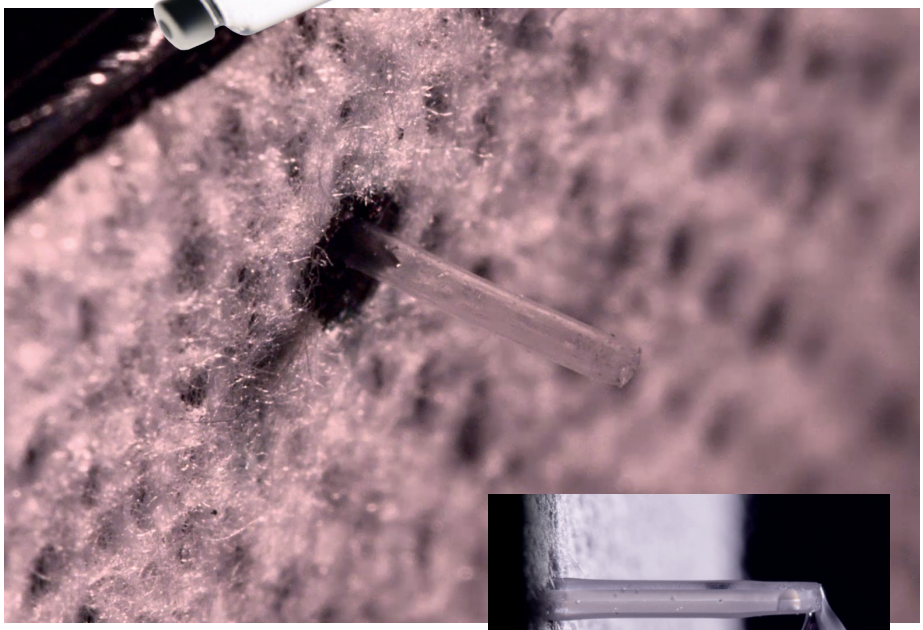

Figure 2: Automatic needle insertion system with soft cannula remaining in the body after insertion.

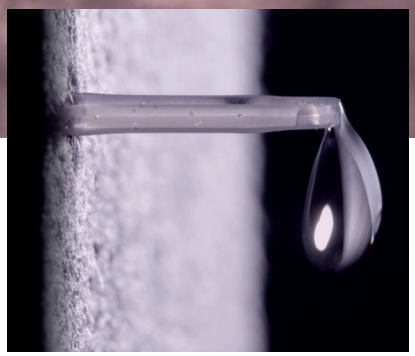

Figure 3: Accurate dosing assured by the unique pump system.

"The system offers pharma companies full flexibility in setting the doses as required up to a maximum dose."

injections, the pump is able to provide the required dose accurately (Figure 3).

The system offers pharma companies full flexibility in setting the doses as required, up to a maximum dose. There are no constraints such as stroke volume limiting individual doses.

FREEDOM OF CHOICE

The cartridge may be pre-assembled by the pharmaceutical company using their specific cartridge which can hold less than 3 mL, or alternatively the patient can choose the insulin supplier by himself (Figure 4).

The device is patched to the body – often the abdomen – and may be operated via an external control unit allowing the patient to have some control.

ELECTRONIC CONTROL UNIT

The software used to control the DrugDeliverySystem offers the highest degree of flexibility. Various levels of access guarantee its proper use. The pharma company can set the overall limits relative to the drug administered, doctors or healthcare personnel can define the patient's specific settings and the patient can, for example, set a bolus as required by his diet (Figure 5).

The external control unit may be combined with a glucose monitoring system.

BATTERY

Once the cartridge is empty, the patient receives an alert requesting a change of the disposable part including a new, full cartridge. The battery of the reusable part can be reloaded. One battery load supports a minimum three to five-day operation of the device.

ADVANTAGES

The advantage for the end user is a reduction in:

- Contamination
- Handling errors
- Needlestick injuries
- Time spent administering medication.

Pharma companies can differentiate themselves from competition. The final design is according to your specific needs from a functional as well as design perspective.

PORTFOLIO

As well as this DrugDeliverySystem, Weibel CDS offers:

- DrugDeliverySystem large volume (LDV) based on our MiniBagSystem concept for micro-infusion of 30-50 mL.[1]
- DrugDeliverySystem 1 mL long syringe based. Automatic injection of 1 mL long syringes over a period or at a specified time.
- DrugDeliverySystem with automatic reconstitution functionality.
- Squeezer Test and Application System for stability testing of drugs in the MiniBagSystem.

Figure 4: Available for all 3 mL cartridges.

- The SuperCapSyringe® product family upgrades your vial practically to a prefilled syringe. Based on a modular design, the syringe is fully adaptable to your application needs. It is supplied in different sizes and with staked needles including a passive safety device.[2]
- The Reconstyringe® product family is first in offering a fully automated reconstitution of lyophilised drugs. The drug is contained in its original vial, the solvent in the MiniBagSystem. With a spring mechanism and holder plates the content of the MiniBagSystem is emptied into the vial. Like a Swiss watch, it runs through the full reconstitution cycle. Finally, the drug is drawn into the SuperCapSyringe® for injection.[2]

Figure 5: External Control Unit.

International patents pending. SuperCapSyringe® & Reconstyringe® are registered trademarks of Weibel CDS AG.

To watch the system in operation go to: http://www.weibelcds.com/wp-content/themes/cdsweibelag/videos/weibel_dds.ogv

REFERENCES

1. *Weibel LD and Manser HP, "DrugDeliverySystems: Ready to Use for Highest Patient Comfort". ONdrugDelivery Magazine, 2015, Issue 58, pp 16-18.*
2. *Weibel LD and Manser HP, "Reconstyringe: Full Integration of all Functions & Parts, Fully Automated Reconstitution". ONdrugDelivery Magazine, 2015, Issue 55, pp 66-67.*

DrugDeliverySystem
Cartridge based

Designed to accept standard 3 ml insulin cartridges, yet barely larger than the cartridge itself, the system is extremely small and still incorporates all functions needed.

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International patents pending

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