

3M Proves Efficacy of Hollow Microstructured Transdermal System (hMTS)

Additional data reinforces performance of solid microstructured transdermal system (sMTS)

3M Drug Delivery Systems today unveiled data highlighting the tolerability and delivery characteristics of a hollow microstructured transdermal system (hMTS) for the systemic delivery of high volume injectables traditionally delivered by syringe and needle. The technology was showcased in a poster session at the annual meeting of the American Association of Pharmaceutical Scientists (AAPS) in Atlanta.

The data, which showed results from both animal and human testing, was presented by Kris Hansen, PhD, MTS Technical Manager for 3M Drug Delivery Systems. Most notable in the research findings, deliveries of human growth hormone and naloxone via hMTS patch were found to be comparable to a subcutaneous injection with regard to bioavailability and pharmacokinetic (PK) profile. The data demonstrates rapid transdermal infusion of non-traditional transdermal drugs in liquid formulations, highlighting the potential of this delivery technology for relatively high volume injectables, including small molecule salts and large molecules (up to 150 kD) traditionally delivered by intramuscular or subcutaneous injection.

“Leveraging 3M’s expertise in drug delivery, pharmaceutical development, microreplication, and manufacturing process optimization, the hMTS technology offers an innovative platform for delivery of a wide variety of formulations traditionally available only via injection,” said Hansen. “These data show that hMTS provides delivery with the speed, efficiency and versatility of a syringe injection but with the simplicity and comfort of a transdermal patch.”

3M also presented data reinforcing the efficacy of its solid microstructured transdermal system (sMTS) for delivery of vaccines as well as for systemic delivery of highly potent proteins. New research showed that sMTS outperformed intramuscular injection as the optimal platform for the delivery of vaccines, alone or in concert with 3M vaccine adjuvants that are compatible with intradermal delivery. “When we combined sMTS with 3M’s vaccine adjuvants, we obtained an optimal immune response at antigen doses that were significantly lower than those needed for optimal response when given by injection,” states Hansen.

Pharmacokinetic (PK) profiles resulting from sMTS delivery of a variety of molecules were also presented. The results showed comparable performance to administration of the drug by subcutaneous injection. “Our more recent data show effective delivery of large molecules, like proteins, with sMTS delivery efficiency matching subcutaneous delivery. These data imply potential for sMTS to provide systemic delivery of biopharmaceuticals,” stated Hansen. Previous data have demonstrated that sMTS is a safe and user-friendly delivery platform that can provide improved stability, which may reduce the need for refrigeration of some biopharmaceutical formulations.

It is well established that 3M polymer microstructures can penetrate the stratum corneum with minimal patient discomfort, and provide a delivery route for drugs typically available only via injection. The new hMTS application, coupled with reinforcement of the efficacy of sMTS, expands the range of drugs that can be delivered transdermally.

For more information or to receive a copy of the posters, please contact 3M Drug Delivery Systems at 1-800-643-8086.

About 3M Microstructured Transdermal System

3M Microstructured Transdermal System (MTS) is a state-of-the-art system for transcutaneous or intra-dermal drug delivery. MTS bypasses the barrier properties of the stratum corneum and provides a means to deliver a wide variety of molecules that ordinarily would not penetrate the skin.

About 3M Health Care

3M Health Care, one of 3M's six major business segments, provides world-class innovative products and services to help health care professionals improve the practice, delivery and outcome of patient care in medical, oral care, drug delivery and health information markets.

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