Development of the skin application patch based on transdermal absorption technology

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Lead Chemical was established in 1969 and has, since then, consistently engaged in the research and development of pharmaceutical formulations based on transdermal absorption technology. As a result of our efforts toward such research and development, Lead Chemical has now established itself as a leading company specializing in research and development, manufacture and sale of pharmaceuticals, mainly including transdermal absorption type anti-inflammatory and analgesic adhesive patches.

Around the time when our company was established (before 1970s), there were very few research reports published regarding transdermal absorption with no social background existing to support recognition of transdermal absorption type patch preparations, therefore requiring development of such pharmaceutical preparations to be preceded by implementation of a sufficient amount of basic research on transdermal absorption to achieve better understanding of such absorption so as to enable the pharmaceutical preparations to establish their social status and position. In the 1980s, Lead Chemical and other manufacturers of pharmaceutical products for external use began to hold joint symposiums and conduct other similar activities in an attempt to raise the academic status of transdermal absorption. Thereafter, we began to see an increase in the number of research reports published both at home and abroad regarding transdermal absorption, resulting in the skin being presently recognized not only as a barrier protecting the body from the external environment, but also as a tissue capable of being used as a site for administration of drugs.

In addition, adhesive patches, the dosage form originally developed in Japan, having a long history of pharmaceutical application in this nation, have been recently accepted in overseas countries for use as a new dosage form.

Transdermal absorption formulations have the following features:

- Easy to maintain blood drug concentrations at necessary levels for extended periods
- Prevents sudden increases in blood drug concentration
- Can be used for patients who have difficulty swallowing oral preparations
- Possible to avoid effects of food ingestion and the pain accompanying injections that may otherwise occur
- Possible to avoid hepatic first-pass effects
- Possible to reduce damage to gastrointestinal tract compared to oral administration
- Improvement in compliance through reduction in number of doses
- Can suspend doses as necessary

In addition, topical application patch formulations have the following features as DDS (drug delivery system):

- It is possible to deliver drug through the skin directly to the affected site, thus

reducing systemic drug exposure with resultantly diminished risk of side effects that may otherwise occur.

- It is possible to achieve sustained drug delivery during patch application.

I will present my lecture by introducing relevant research results, formulation examples and other matters focusing on the above-mentioned features.

Curriculum vitae

【Name】
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【Experience】
1990 – August 1993 Researcher, Research Institute TTS Technology in Josai University in Saitama, Japan.
1990 - Present Lead Chemical Co., Ltd. in Toyama, Japan.

- 1994－1998 Researcher, Research & Laboratory Department
- 1998－2002 Deputy Manager, Research & Development Department
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【Membership】
The Pharmaceutical Society of Japan.
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【Education】
Bachelor of pharmaceutical science from Toyama Medical and Pharmaceutical University in Toyama, Japan.
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