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# Topical Insulin

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**Old Drugs – New Tricks? Maybe – Maybe Not.**

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As previously discussed in this column, DPIC answers a wide variety of drug information queries from pharmacists throughout BC. Questions into novel applications for established products are among the common calls to DPIC's drug information pharmacists. Here is another example of such queries recently posed to the Drug Information Service at DPIC.

**Q:** A prescriber has requested "Humalogue" insulin cream to enhance wound healing. Is this preparation available?

**A:** In May 2008 an online journal, *Dermatology Times*, reported that the application of an insulin analogue cream improved healing of wounds caused by burns.(1) The article was based on a poster abstract which studied the use of a cream prepared with "humalogue" (no further description given) 10 U/g or 30 U/g, compared to placebo.(2) Cream was applied every 2nd day for 2 weeks to guinea pigs with second degree burns (n=7 for each treatment). The authors reported that burn contracture was significantly improved in the higher insulin concentration group compared to placebo, although objective measurement values were not provided, and there was no significant improvement in wound healing area.

The idea of using insulin topically has been around for decades. The application of insulin to wounds was described in anecdotal case reports and animal studies dating back to the 1960s.(3) A 1976 pilot trial in 14 subjects which studied topical insulin in the healing of decubitus ulcers did not show statistically significant improvement, but prompted further investigation because of "general support" for the therapy.(4) The authors subsequently randomised 29 geriatric subjects with pressure sores to receive twice daily topical application of 10 U regular insulin and again failed to note a statistically significant differences compared to control.(4) They therefore cautioned that with lack of demonstrated benefit, and possible adverse outcomes, the use of topical insulin could not be justified. Indeed, profound hypoglycemia (blood glucose < 2.5 mmol/L) occurred in a patient who had a decubitus ulcer

sprayed with 1-2 mL of insulin (20 U/ mL).(5)

Since these early publications, additional investigations and anecdotes regarding insulin and wound healing have appeared sporadically (3,6), but none have provided convincing evidence as to the safety and efficacy of topical insulin in a clinical situation. In vitro experiments have studied the effects of insulin on wound healing mechanisms, including keratinocyte motility, adhesion molecules expression, and endothelial cell migration.(7) Others have studied local injections of insulin zinc suspensions in a rabbit model, speculating that lack of proven effectiveness may be due to difficulties in providing sufficiently persistent insulin levels at the wound itself.(8) No doubt studies will continue into this area, but at this time information regarding the usefulness of insulin in wound healing remains speculative, and safety issues have yet to be addressed.

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DPIC answers a wide variety of drug information questions from pharmacists and other health professionals throughout BC. The Centre would rather assist health providers with questions, than have them be doubtful about drug safety or therapeutic options in their patients.

*If pharmacists and other health professionals are finding it difficult to locate information, then DPIC's Drug Information Service is here to help.*

- Hours: 0900 – 1600 h weekdays
- Lower mainland: 604-806-9104
- Rest of BC: 1-866-298-5909

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