



PIC QUESTION OF THE WEEK: 11/29/2004

Q: Please explain the role of iontophoresis in transdermal drug delivery.

A: Iontophoresis is a process by which electrical energy stimulates the movement of ions across the stratum corneum. It is based on the principle that “like charges repel and opposite charges attract.” Phonophoresis is the term applied when ultrasound is used rather than electrical current. Iontophoresis is becoming a popular method of drug delivery for physical therapists, physicians, and sports medicine professionals. This non-invasive method of drug delivery avoids systemic complications of medications, tissue damage, and infection from needle insertion. A solution of the specific drug is placed in a pad (“bubble patch”) or gel applied to the skin. An active electrode (with the same charge) is placed on the pad or gel and the return electrode is put elsewhere on the body. A small current is then applied for 15-20 minutes. The drug traverses the skin producing its local effects. Iontophoresis is principally used for the delivery of corticosteroids, local anesthetics, or other anti-inflammatory compounds. Dexamethasone (negative charge) sodium phosphate is typically used in a concentration of 0.4% while lidocaine (positive charge) is administered as a 4% solution. The procedure is usually repeated on a weekly basis for 3 or more weeks.

References:

- Allen LV. Compounding for iontophoresis. Secundum artem. http://www.paddocklabs.com/forms/secundum/volume_10_4.pdf (accessed 2004 Nov 23)
- Thompson DF + McGoodwin DF: Phonophoresis (Drug Consult). In: Klasho RF (Ed): DRUGDEX System. Thompson MICROMEDEX, Greenwood Village, Colorado (Edition expires March, 2005).

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