

## Percutaneous Absorptiometry by Laser Photoacoustic Method Using an Open-ended Cell.

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The feasibility of percutaneous absorptiometry technique utilizing an open-ended Photoacoustic (PA) cell are reported. This PA system is capable of measuring percutaneous absorption *in vivo* with both high sensitivity and accuracy. In addition, it provides the means for very simple measurement, compared with conventional methods such as radioisotopes.

An *in vitro* percutaneous absorptiometry was attempted using 1 % indomethacin (IDM) ointment applied to an extracted hairless mouse skin. By this experiment, both the decrease in the amount of IDM on the donor side by the PA signal and the increase in the concentration of IDM in the receiver side by UV absorbance were observed along with penetration of IDM through the skin.

An *in vivo* percutaneous absorptiometry was attempted using the 1 % IDM ointment applied to a hairless mouse. The diffusion coefficient of IDM through the skin *in vivo* obtained by this PA method was calculated to be  $6.7 \times 10^{-6} \text{ cm}^2/\text{min}$ . This was in good agreement with the results obtained by the conventional *in vitro* method using a longitudinal diffusion cell.

Based upon the results shown above, it was concluded that the laser PA method using an open-ended cell was applicable to percutaneous absorption.