Effectiveness of benzoyl peroxide application in the treatment of acne

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Poster Presentation Abstract:

Acne is a skin condition involving the oil-producing glands in the skin that affects roughly 5 million Canadians. A common medication used to treat acne contains the organic compound benzoyl peroxide that works to remove acne causing bacteria in the epidermis. Benzoyl peroxide is an extremely volatile substance and, therefore, only constitutes 2% active ingredient of related acne care products. A multimedia fugacity model was used to determine the amount of chemical effectively emitted or absorbed into the skin. The parameters used in the model were set to fit a single application of medicated lotion to the face, with the non-aqueous phase liquid component being the sole receiver of the chemical. Assuming these parameters, it is estimated that 4.58×10^{-5} kg of benzoyl peroxide is deposited into the skin per application. The model demonstrates that humans are the main recipient of the chemical with over two-thirds being absorbed and the remaining is lost to the atmosphere through evaporation with negligible emissions to the water and soil environments. Since benzoyl peroxide is the most common chemical used to treat acne, it is important to determine how much penetrates the skin and the effectiveness of each application.

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