transmitting relationship to the body surface and forming a body surface-system interface; and (c) a backing layer that serves as the outer surface of the device during use, wherein the base is effective to provide a pH within the range of about 8.0-13.0 at the body surface-system interface during administration of the drug. In one aspect of the invention the pH is about 8.5-11.5, in another aspect the pH is about 9.5-11.5, and most preferably about 10.0 to 11.5. The pharmaceutically acceptable base can be an inorganic or an organic base.

DETAILED DESCRIPTION OF THE INVENTION

[0010] The present invention provides a method for enhancing the flux of an active agent through a body surface. The active agent and a basic permeation enhancer are administered to a localized region of a human patient's body surface. The permeation enhancer is a pharmaceutically acceptable base, and is present in an amount effective to: a) provide a pH within the range of about 8.0-13.0 at the localized region of the body surface during administration of the drug and b) enhance the flux of the active agent through the body surface without causing damage thereto. Examples of suitable permeation enhancers are described below. The active agent and permeation enhancer may be present in a single pharmaceutical formulation, or they may be in separate pharmaceutical formulations.

[0011] The steps of (a) administering the active agent and (b) administering the basic permeation enhancer can be done in any order. For example, step (a) can be done prior to step (b); step (b) can be done prior to step (a); and steps (a) and (b) can be done simultaneously. Certain methods may be preferred depending upon the selection of active agent and basic permeation enhancer, as well as taking into consideration ease of patient compliance and so forth. For example, performing steps (a) and (b) simultaneously, is one preferred method of the invention.

[0012] I. Definitions and Nomenclature

[0013] Before describing the present invention in detail, it is to be understood that this invention is not limited to particular drugs or drug delivery systems, as such may vary. It is also to be understood that the terminology used herein is for the purpose of describing particular embodiments only, and is not intended to be limiting. In addition, before describing detailed embodiments of the invention, it will be useful to set forth definitions that are used in describing the invention. The definitions set forth apply only to the terms as they are used in this patent and may not be applicable to the same terms as used elsewhere, for example in scientific literature or other patents or applications including other applications by these inventors or assigned to common owners. Additionally, when examples are given, they are intended to be exemplary only and not to be restrictive.

[0014] It must be noted that, as used in this specification and the appended claims, the singular forms "a,""an" and "the" include plural referents unless the context clearly dictates otherwise. Thus, for example, reference to "a pharmacologically active agent" includes a mixture of two or more such compounds, reference to "a base" includes mixtures of two or more bases, and the like.

[0015] In describing and claiming the present invention, the following terminology will be used in accordance with the definitions set out below.

[0016] "Active agent,""pharmacologically active agent" and "drug" are used interchangeably herein to refer to a chemical material or compound that induces a desired pharmacological, physiological effect, and include agents that are therapeutically effective, prophylactically effective, or cosmeceutically effective. The terms also encompass pharmaceutically acceptable, pharmacologically active derivatives and analogs of those active agents specifically mentioned herein, including, but not limited to, salts, esters, amides, prodrugs, active metabolites, inclusion complexes, analogs, and the like. When the terms "active agent,""pharmacologically active agent" and "drug" are used, then, it is to be understood that applicants intend to include the active agent per se as well as pharmaceutically acceptable, pharmacologically active salts, esters, amides, prodrugs, active metabolites, inclusion complexes, analogs, etc., which are collectively referred to herein as "pharmaceutically acceptable derivatives". The term "active agent" is also intended to encompass "cosmeceutically active agents", which are nontoxic agents that have medicinal or drug-like properties which, when applied to the surface of skin, beneficially affect the biological functioning of that skin.

[0017] The term "aqueous" refers to a composition, formulation or drug delivery system that contains water or that becomes water-containing following application to the skin or mucosal tissue.

[0018] The term "base" is used in its traditional sense, i.e., a substance that dissolves in water to produce hydroxide ions. The water is typically an aqueous fluid, and may be natural moisture at the skin surface, or the patch or composition that is used may contain added water, and/or be used in connection with an occlusive backing. Similarly, any liquid or semisolid formulation that is used is preferably aqueous or used in conjunction with an overlayer of an occlusive material. Any base may be used provided that the compound provides free hydroxide ions in the presence of an aqueous fluid. Bases can provide free hydroxide ions either directly or indirectly and thus can also be referred to as "hydroxide-releasing agents". Hydroxide-releasing agents that provide free hydroxide ions directly, typically contain hydroxide groups and release the hydroxide ions directly into solution, for example, alkali metal hydroxides. Hydroxide-releasing agents that provide free hydroxide ions indirectly, are typically those compounds that are acted upon chemically in an aqueous environment and the reaction produces hydroxide ions, for example metal carbonates or amines.

[0019] "Body surface" is used to refer to skin or mucosal tissue.

[0020] "Carriers" or "vehicles" as used herein refer to carrier materials suitable for transdermal or topical drug administration. Carriers and vehicles useful herein include any such materials known in the art, which are nontoxic and do not interact with other components of the composition in a deleterious manner.

[0021] "Effective amount" or "a cosmeceutically effective amount" of a cosmeceutically active agent is meant a nontoxic but sufficient amount of a cosmeceutically active agent to provide the desired cosmetic effect.

[0022] "Effective amount" or "a therapeutically effective amount" of a therapeutically active agent is intended to