DESCRIPTION FOR THE GENERAL PUBLIC

The human skin is an important route for administration of therapeutic substances, but it is also an important surface barrier that protects the organism against harmful external factors (mechanical, physical, chemical and biological). It means that it prevents allergens, pathogenic microorganisms and various substances from entering inside the organism. Overcoming the skin barrier can be dangerous especially in the case of toxic substances, uncontrolled diffusion of potent compounds or those that have the ability to accumulate in an organism.

In dermatological and cosmetic products (e.g. Veraderm, Penaten Baby, balm Garnier, NIVEA BABY cream, Avene cream, LA ROCHE-POSAY HYDREANE RICHE cream, VICHY AQUALIA THERMAL), the siloxanes with cyclic and linear structure are commonly used as an excipients. They are the components of most products (e.g. emollients, creams, balms, lotions, shampoos, antiperspirants, deodorants). Many of their advantages are appreciated, both such as: impact on the stability of the product as well as the beneficial effect on the skin. Siloxanes impart a soft-silky feel to the skin, are easy spreading and they are consider as a skin protectant. Generally, it is estimated that siloxanes are found in every second cosmetic or body care product.

It has been proved that the barrier properties of the skin are caused by its outermost layer, the *stratum corneum*, which is a part of the living epidermis adjacent to the dermis. It should be pointed out that in some cases, skin natural barrier properties can altered by the interaction of substances with the *stratum corneum* components, which consist of the lipids and proteins. The interaction can caused the conformational changes which can able to change the skin barrier. In results the increased uncontrolled diffusion of xenobiotics including toxicity compounds, viruses and allergens into the skin can observed. Apart from these, the natural skin barrier can be destroyed.

Due to the fact that siloxanes with a linear and cyclic structure (commonly named silicones) are used in medicinal products for the skin, personal care products and cosmetics intended not only for adults and children, but also for infants, it is necessary to study if these compound are safe.

Therefore, the aim of this project is verification of interactions of cyclic and linear siloxanes with both human skin structures and the components of the stratum corneum SC layer, which are responsible for its barrier properties, and at a later stage an evaluation of their effects. The main aim has been divided into sub-aims as an examination of the: 1st, 2nd and 3rd levels of effects. It should be noted that so far no such studies have been carried out and there are no publications on this subject.