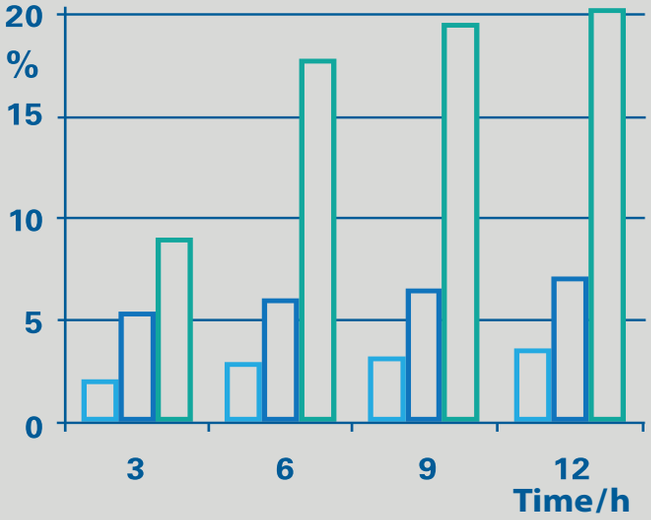
Percutane absorption of Hyaluronic acid in dependence on the molecular weight

- HA with 1560 k Dalton
- HA with 280 k Dalton
- HA with 8,3 k Dalton

ExperChem
Kosmetik-Rohstoffe von Experten

Hyaluronic acids
Sodium hyaluronate

HA concentration
In a diffusion cell



Explanation
of the diagram and experiment.

The diagram is showing that the lowest molecular weight Hyaluronic acid molecule is penetrating best through a skin than higher molecular weight molecules. The investigated "oligomer" molecule has a molecular weight of 8300 Dalton.

In a diffusion cell different samples were measured at pH 6.5 phosphate-buffer solution (0.3%) with a standardized skin. Every three hours the increase of HA in the diffusion cell was determined.

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Our product portfolio

Hyaluronic acids

History

Hyaluronic acids (HA) are substances which are manufactured by a biotechnological process. They are produced in starting from plant raw materials.
Hyaluronic acid was isolated from cattle bones the first time in 1934. Since these days many scientific investigations were made which lead to a high number of medical and cosmetic applications.

Properties

HA is a natural compound and part of the human skin with the function to support the connective tissue and the collagen binding. HA has the task to build up the proteins and to regulate the water concentration in the skin. The formation of HA decreases in the human body with increasing age of the skin respectively the body. The consequences are the formation of wrinkles and dry skin as well as loss of the elasticity of the skin. HA exists with different kind of molecular weight distributions.

Application

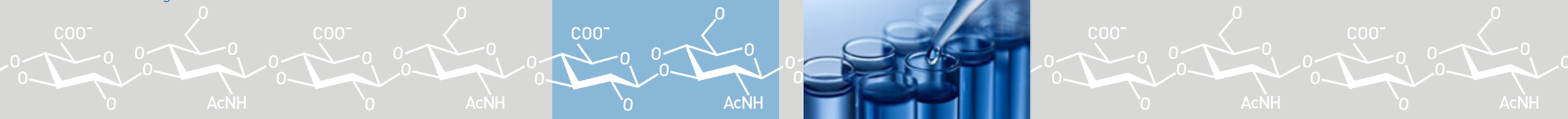
The topical application of high molecular weight HA is protecting and moistening the skin as a thin film. The lower molecular weight HA can penetrate deep into different layers of the skin and has an impact on regeneration of the skin because of their anti – inflammation properties.

HA was indentified in different parts of the human body. HA is present in the eyes, the cartilages, connective tissues and also in the EZM (extra cellular matrix) of the cells of the skin. In this special part the elasticity of the human skin is influenced by HA and collagen as well as elastin. HA has the capability to bind large quantities of water (1 g HA is binding nearly 6 kg of water). HA with smaller molecular weight < 10.000 Dalton has a very low polymerization grade (about 50 molecules per unit) which causes a very good penetration through the skin.

Manufacturing

Industrial quantities (large scale) of HA are produced by a fermentation process starting from wheat peptones, sugar and with the aid of bacteria called Streptococcus Zooepidemicus. We are delivering HA for cosmetic, pharmaceutical use as well as for use in nutrition supplements.

Hyaluronic acid is structured based on Di-saccharine units of the glucuronic acid and the N-Acetylglucosylamin.
The molecule belongs to the group of Glycosylaminoglycan (GAG).



All products form when diluted a very clear solution in water. Typically no turbidity is observed. The transparency measurement fulfils in all cases a value ⩾ 99 %.

INCI Name: *Sodium Hyaluronate*

High molecular species:	**1200 – 1600 k Da**
Trade name:	Raya Hyaluron SHMW
Medium molecular weight:	**500 – 1000 k Da**
Trade name:	Raya Hyaluron HMW
Low molecular weight:	**200 – 400 k Da**
Trade name:	Raya Hyaluron MMW
Small molecular weight:	**10 – 50 k Da**
Trade name:	Raya Hyaluron SMW
Oligomer molecular weight:	**< 10.000 Da**
Trade name:	Raya Hyaluron oligomer

For all types dosage is recommended depending on the cosmetic application between 0,2 – 2 %.