

*< Hyalo-Oligo<sup>®</sup> >*  
*for skin care*

*~High penetration ' High moisture retentivity~*

Q.P. Corporation

Fine Chemical Division



# *Features of <Hyalo-Oligo<sup>®</sup>>*

*(The differences from common hyaluronic acid)*

## <Common hyaluronic acid>

The skin is covered by hyaluronic acid as if it is membrane.



Loss of skin moisture is prevented.



Skin moisture is kept.

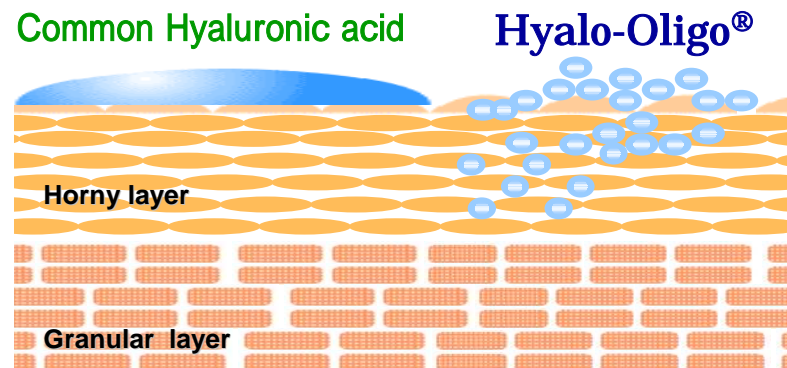
Common hyaluronic acid is easily washed away because it doesn't penetrate into the skin

## <Hyalo-Oligo<sup>®</sup>>

It is quite a new hyaluronic acid with very low molecular weight (av.7,000 da).

Since Hyalo-Oligo<sup>®</sup> covers the skin surface and also **penetrates into horny layer**, it keeps the skin moisture both inner and outer side of the skin.

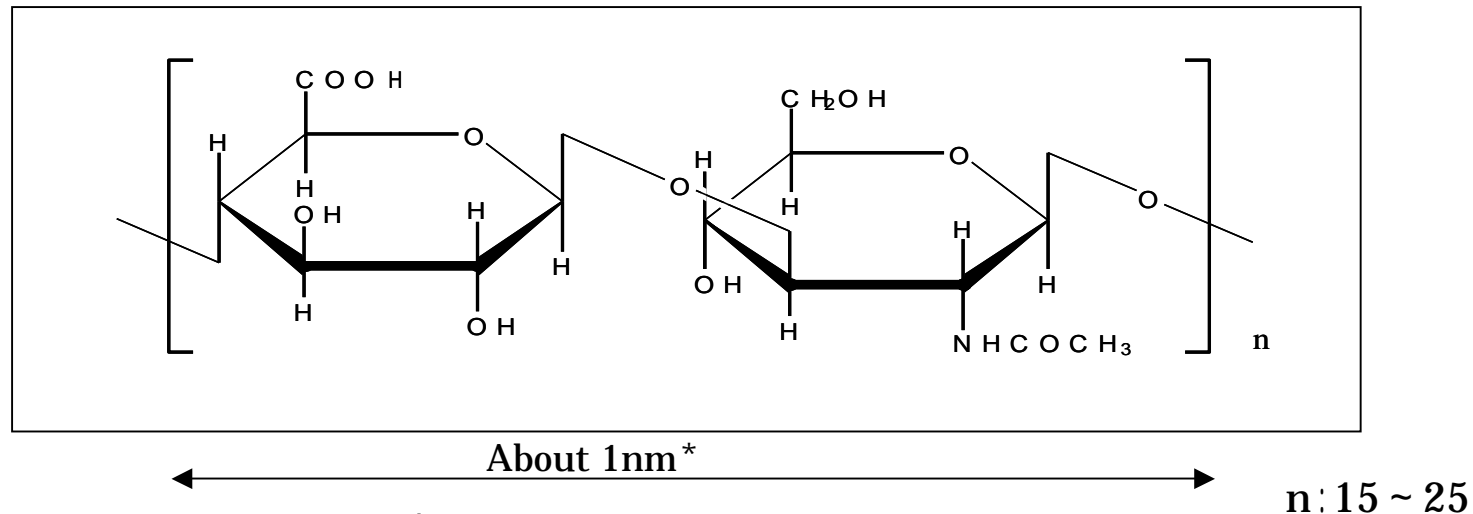
Hyalo-Oligo<sup>®</sup> which remains in horny layer of the skin is not washed away, thus unlike common hyaluronic acid, **it retains the skin moisture even after washing.**



# *Hyalo-Oligo<sup>®</sup>*

## Structure and Molecular size

- Average molecular weight : Less than 10,000  
(By conversion from intrinsic viscosity)
- Average molecule size : About 15 ~ 25nm



\* Glyco forum, Hyaluronan Today  
( <http://glycoforum.gr.jp/science/hyaluronan/hyaluronanJ.html> )

The gap among cells of human skin surface is studied \*\* as 40~50nm, and there are pores and sweat glands on skin surface. Therefore it is no wonder that Hyalo-Oligo<sup>®</sup> penetrates into human skin.

\*\* [ The journal of investigative dermatology ] No.124 article titled ' Nanostructure of the epidermal extracellular space as observed by cryo-electron microscopy of vitreous sections of human skin ' written by Ashraf Al-Amoudi, Jacques Dubochet, Laes Norlen.



# *Feature 1 . Transdermal absorption*

**Hyalo-Oligo<sup>®</sup> penetrates into horny layer of the skin**

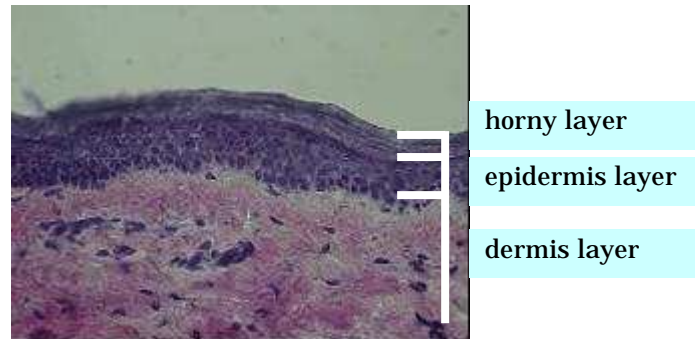


Fig.1 Hemato-xylin/eosin dyeing of skin

Note ) Fig.2

1% solution of Hyalo-Oligo<sup>®</sup> labeled with fluorescent probe was applied to the surface of the test skin for **one hour**.

Fluorescent colouring at the lower part of the Fig.2 is of elastic protein which by nature exists in the skin cell.

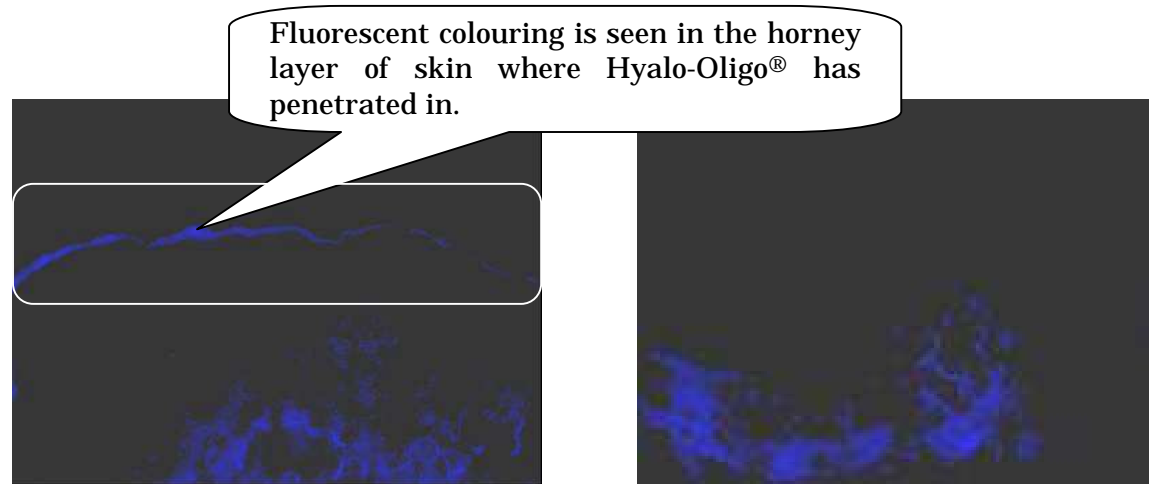


Fig.2 Penetration of Hyalo-Oligo<sup>®</sup> into the horny layer of skin (fluorescent picture).

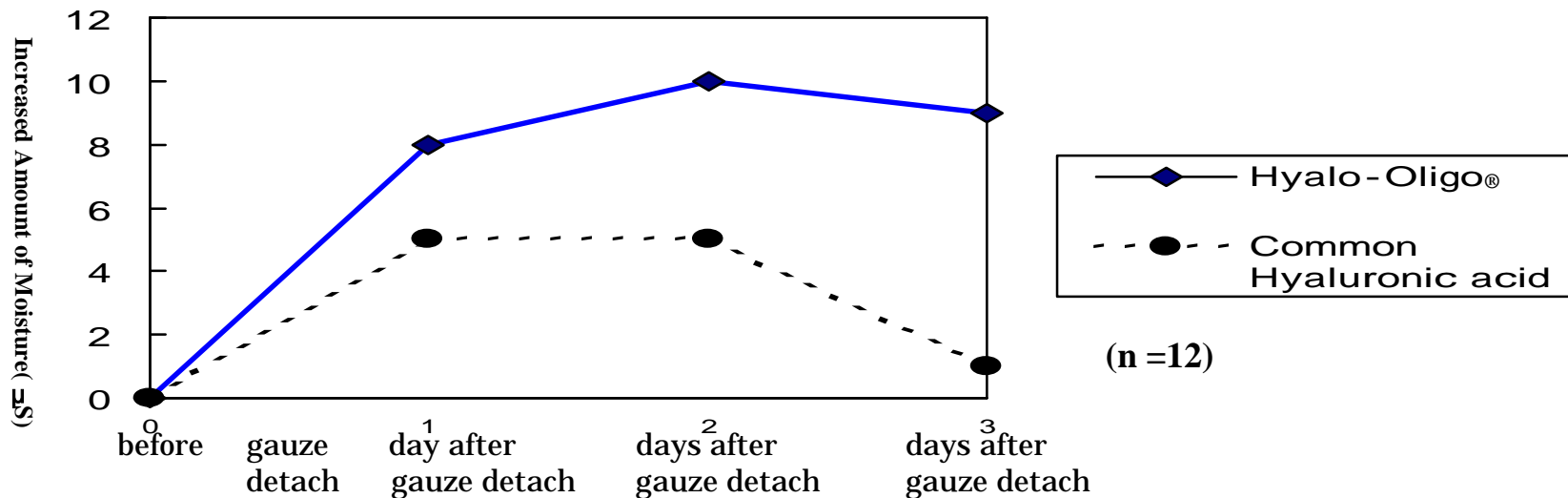
Fig.3 Reference –no Hyalo-Oligo<sup>®</sup> is applied (fluorescent picture).



## Feature2. Skin moisture increase

**Hyalo-Oligo<sup>®</sup> increases twice as much skin moisture as common hyaluronic acid.**

(Presented at Annual Meeting of the Pharmaceutical Society of Japan, March 2006 by Takushi Yoshida Q.P. Corporation)



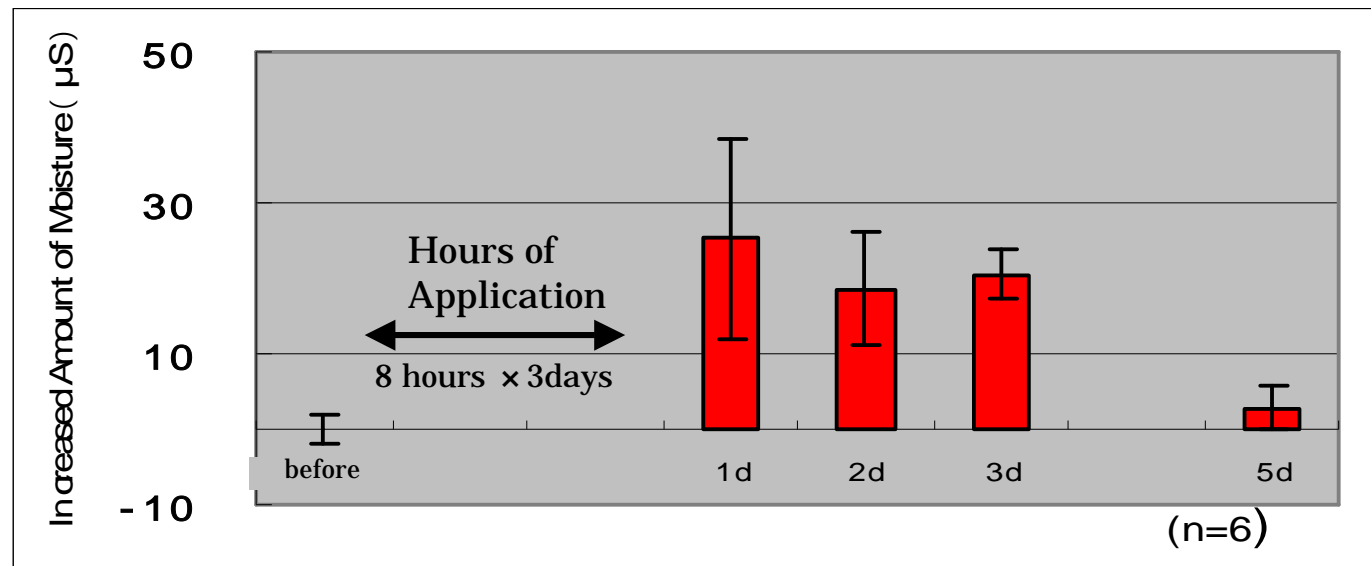
The gauze soaked in 1% solution of Hyalo-Oligo<sup>®</sup> was attached to the human skin for 24 hours. (Control: 1% solution of common hyaluronic acid). After the gauze was detached, the skin electric conductivity indicating the amount of skin moisture was measured at three points, namely 1 day after detaching gauze (above 1), 2 days after (above 2), 3 days after (above 3).



# *Feature 3 . High moisture retentivity*

**Hyalo-Oligo<sup>®</sup> keeps skin moisture during 3 days after application.**

(Presented at Annual Meeting of the Pharmaceutical Society of Japan, March 2006 by Takushi Yoshida Q.P. Corporation)

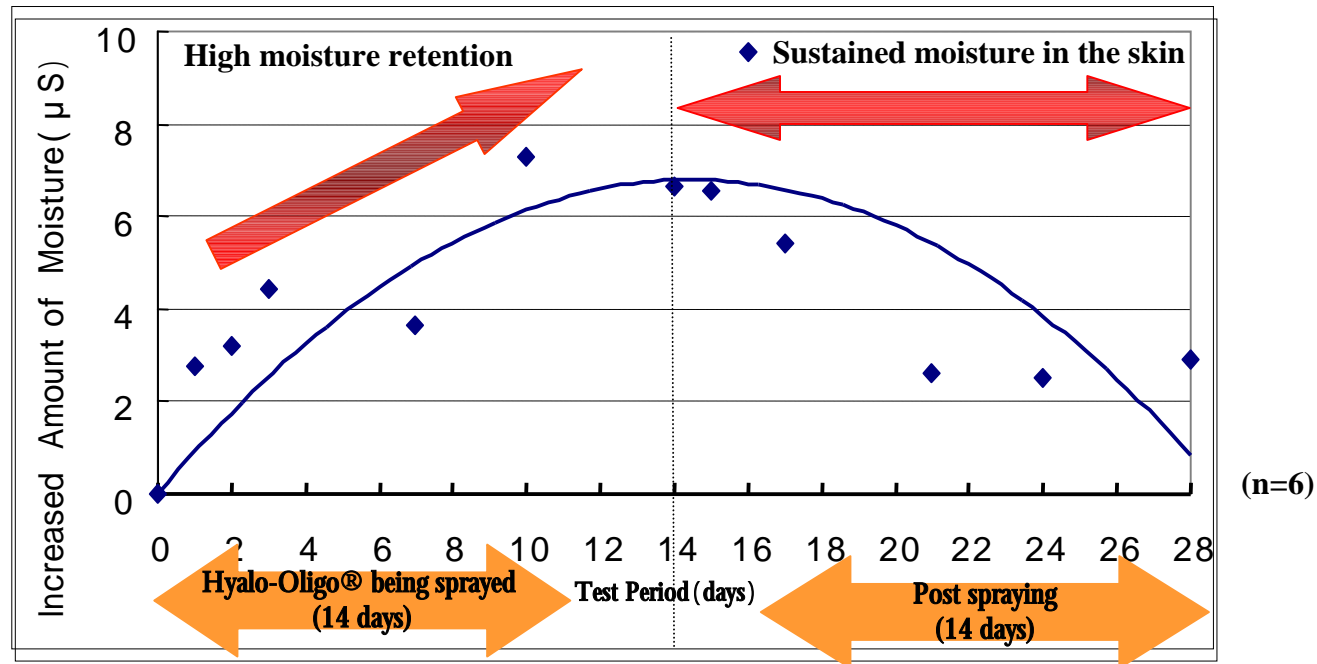


The gauze soaked in 1% solution of Hyalo-Oligo<sup>®</sup> was attached to the human skin for 8hours x 3days. After this application, the skin electric conductivity indicating the amount of skin moisture was measured at three points, namely 1 day after the application (above 1d), 2 days after (above 2 d), 3 days after (above 3 d).



# *Long period continuous application test*

A trend was confirmed that the skin where Hyalo-Oligo<sup>®</sup> is being applied is kept firm and moist compared with pre-application.



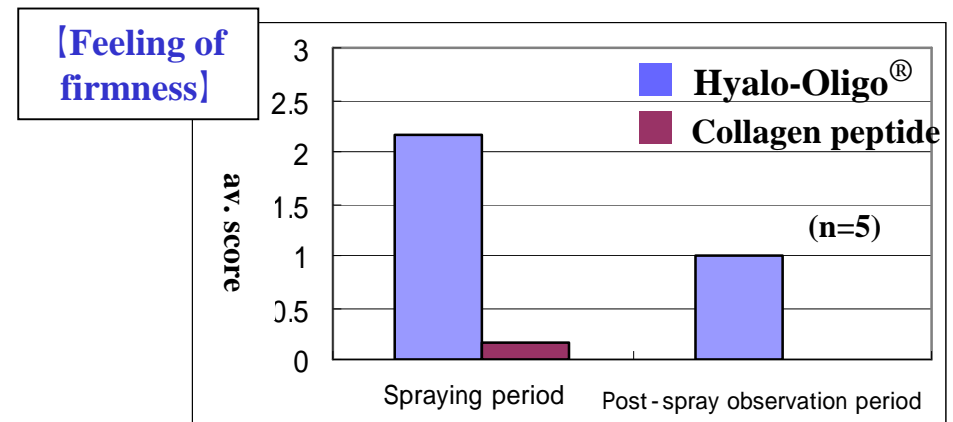
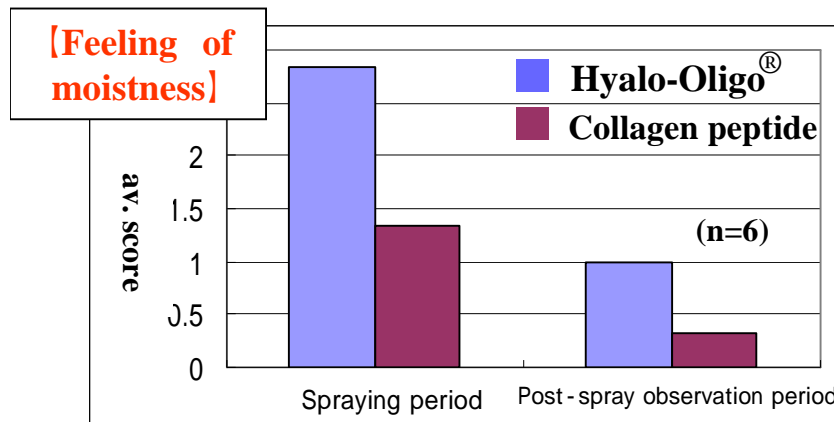
1% water solution of Hyalo-Oligo<sup>®</sup> was sprayed over forearm of 6 test subjects twice a day in the morning and in the evening for 14 days. Increase in moisture contents of the skin was measured by electrical conductivity during 14 days of spraying period and of post spraying period respectively.  
(Data by The Research Laboratory of Q. P. Corp.)



# Comparison with collagen peptide

A trend was confirmed that Hyalo-Oligo<sup>®</sup> keeps skin moist and firm better than collagen peptide

<Post-use questionnaire>



1% water solution of Hyalo-Oligo<sup>®</sup> and 1% water solution of collagen peptide were sprayed over forearm of 6 test subjects and 5 test subjects respectively twice a day in the morning and in the evening for the period of 14 days.

Questionnaires were filled in by all of the subjects at the end of the spraying period and of the post-spray observation period respectively.

< Digitalization of subjects' feeling by questionnaire research >

Questionnaires were set in six levels of feeling as :

Felt very strongly    Felt strongly    Felt positively    Felt slightly    Felt very slightly    Did not feel

Then the above sensory judgments were digitalized as :

5-points,    4-points    3-points    2-points    1-point    0-point

This means that the higher the score is the stronger the sensory valuation by the subjects.

(Data by the Research Laboratory of Q . P . Corp . )



# *Sensory research – questionnaire to female users*

## Method

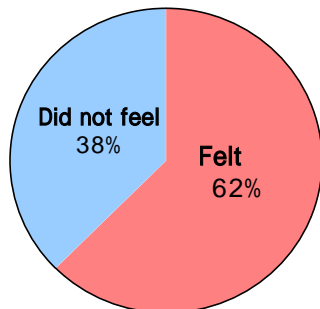
Subjects: 20 female employees of Q.P.Corp.  
 Test sample: Hyalo-Oligo<sup>®</sup>, 0.3% water solution

	Lotion for dry-skin	Pre-lotion
Subject	8 females	12 females
Method	Applying the sample over the face whenever felt dry in a daytime. Comparing before & after use.	Applying the sample to one side of the face after washing followed by normal care. Comparing applied side and non-applied side.
Period of application	10 days	20 days

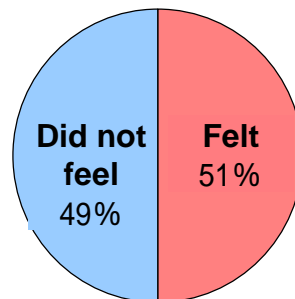
## Result ( Lotion for dry-skin )

**【survey on 10th day of use】**

< smooth silky touch >



< softness >



More than half of the subjects felt improvement in smooth silky touch and softness.

About half of the subjects felt some improvement from the first day of use, 60% of the subjects on the 10<sup>th</sup> day of use.

**Voice**  
 「have smooth feeling like silk」  
 「feel refreshed」



# *Sensory research – questionnaire to female users*

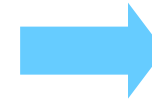
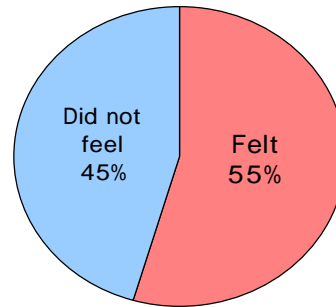
Result( Pre-lotion)

## Smooth silky touch

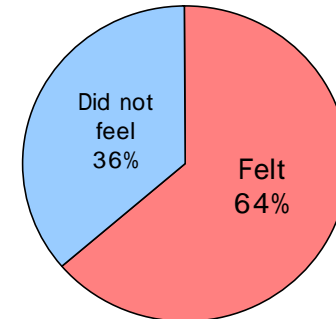
More than half of the subjects felt improvement in smooth silky touch.

On the 20<sup>th</sup> day of use they also felt the skin moist.

< survey on 10th day of use >



< survey on 20th day of use >



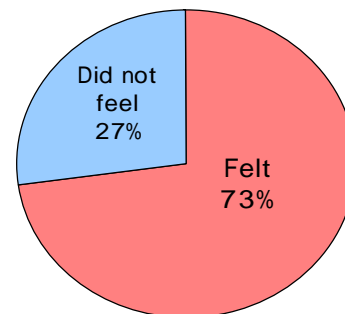
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## Softness

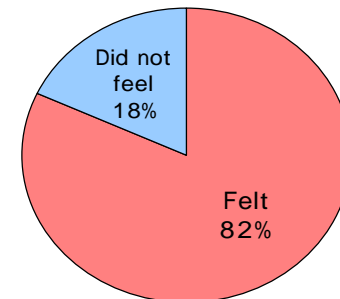
More than 70% of the subjects felt softness.

On the 20<sup>th</sup> day of use they also felt softness.

< survey on 10th day of use >



< survey on 20th day of use >



About half of the subjects who used Hyalo-Oligo<sup>®</sup> for pre-lotion felt some improvement on the first day of use, 70% of the subjects on the 20th day of use.



# Concept 1 .

## 「Penetration type of hyaluronic acid Hyalo-Oligo<sup>®</sup>」

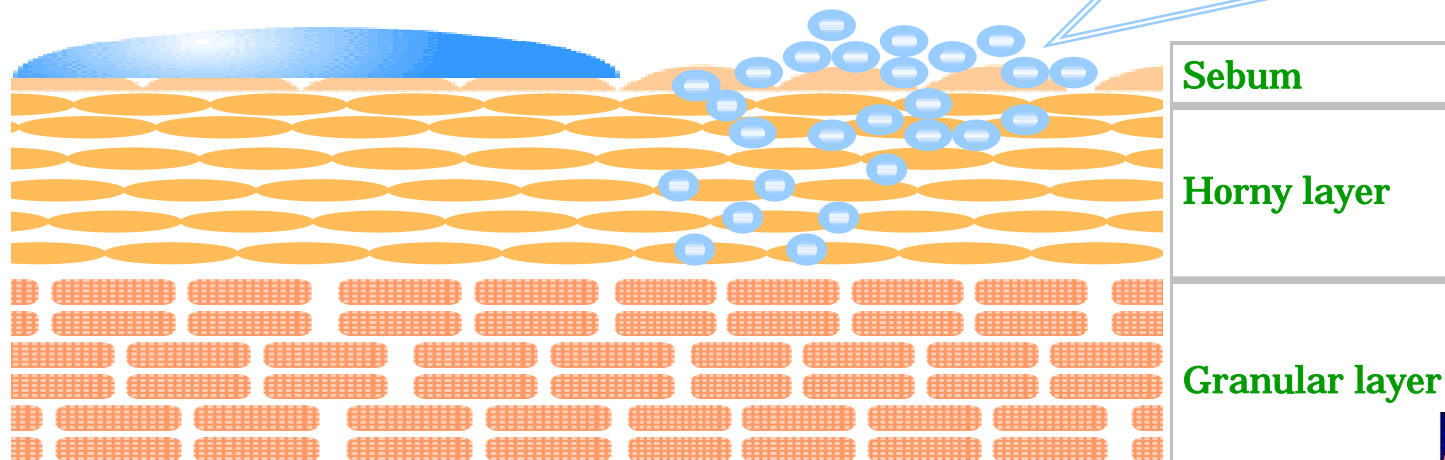
Common  
hyaluronic acid

Hyalo-Oligo<sup>®</sup>

Hyalo-Oligo<sup>®</sup> penetrates into the skin .

The size of Hyalo-Oligo<sup>®</sup> is about 1/100 in  
comparison to common type of Hyaluronic acid

15 ~ 25 nm



## Concept 2.

*Keeps and increases the skin moisture*

*< Double effect = “Hyalo-Oligo<sup>®</sup> + Hyaluronic acid” >*

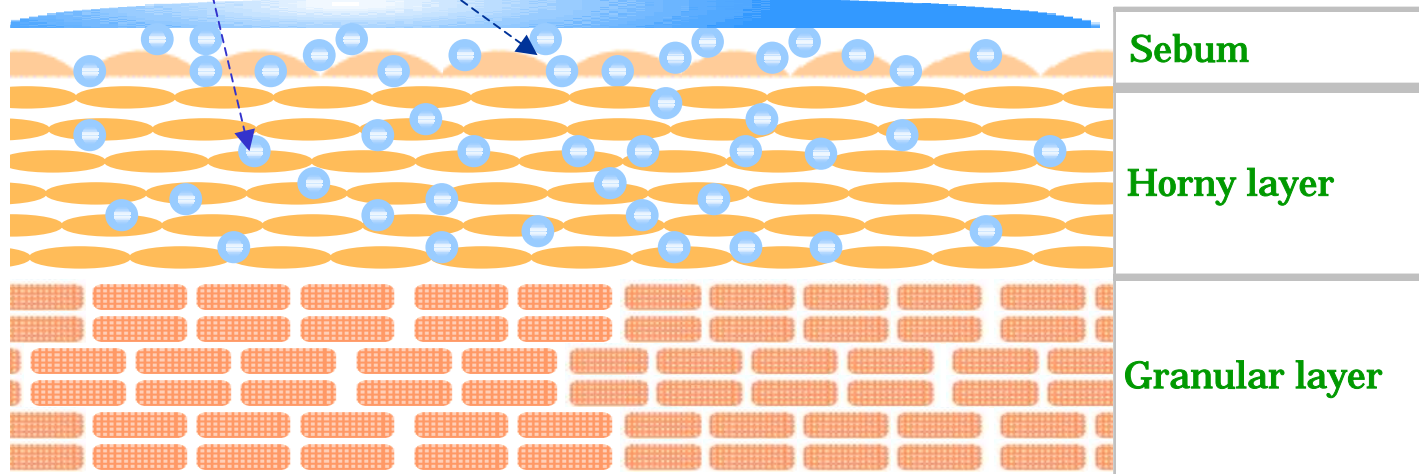
**Hyalo-Oligo<sup>®</sup>**

- Penetrates into the skin
- Increases the skin moisture

*Double moisturizing effect*

**Common  
hyaluronic acid**

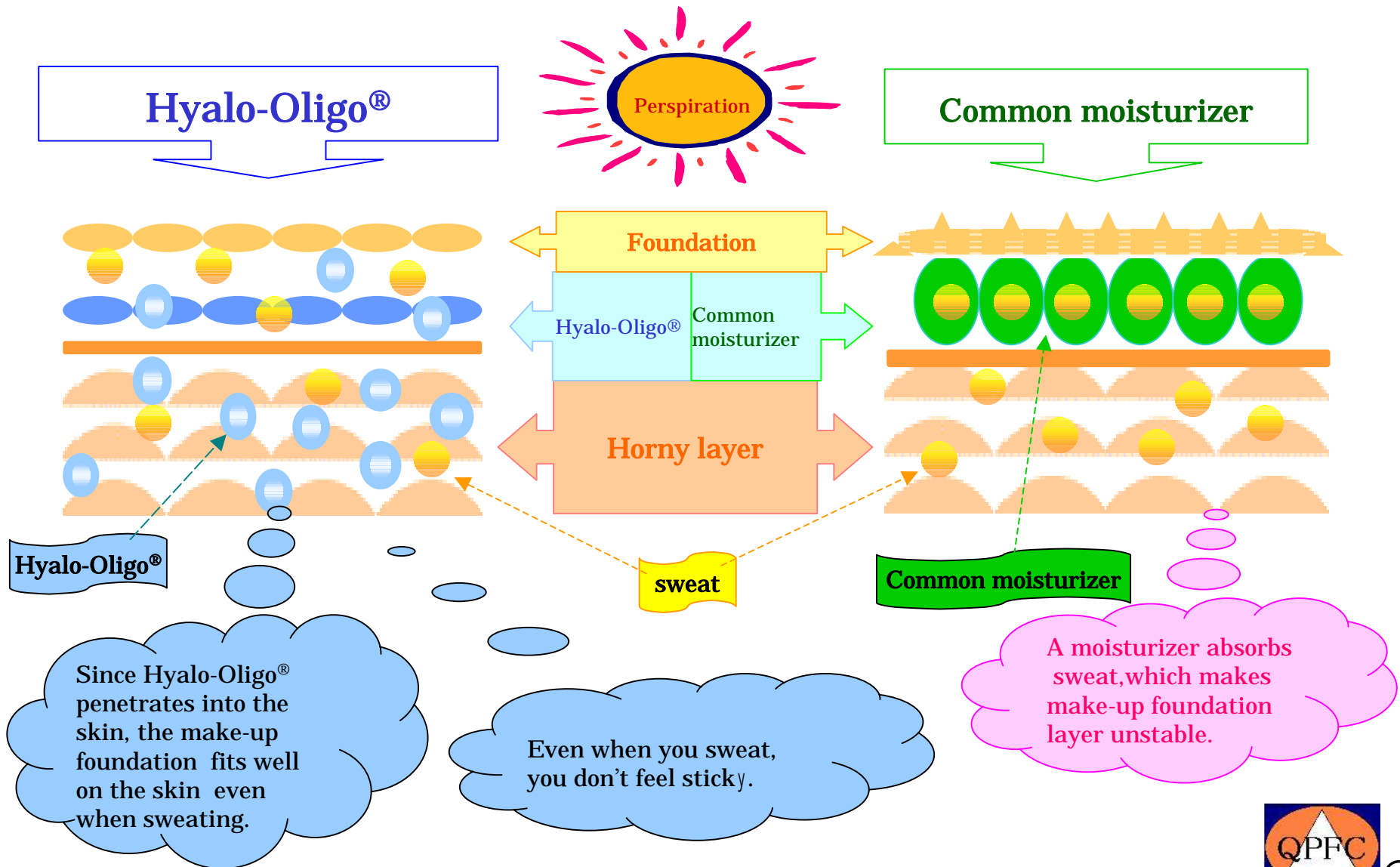
- Shows good feelings due to high viscosity
- Prevents skin moisture from running out



By using Hyalo-Oligo<sup>®</sup> together with common hyaluronic acid, skin moisture retention is doubly effective.



# Concept 3. ~ Basic cosmetics for summer ~ Smooth feelings moisturizer <Hyalo-Oligo®>



*Some proposals to make use of the physical properties and the functionality of <Hyalo-Oligo<sup>®</sup>>*

Concept 1 &/or 3	Concept 2
<p>◆ <b>Day type skin care</b> 1% solution of Hyalo-Oligo<sup>®</sup> The make-up cosmetics could be fit on the skin well</p>	<p>◆ <b>Night type skin care</b> 1% solution of (Hyalo-Oligo<sup>®</sup> + Hyaluronic acid) High moisture retentivity and high penetration</p>
<p>◆ <b>Spray mist as moisturizer</b> Natural water + 0.5 % solution of Hyalo-Oligo<sup>®</sup> To persons who feel dry before and after the make-up</p>	<p>◆ <b>Face mask as moisturizer</b> 1% solution of (Hyalo-Oligo<sup>®</sup> + Hyaluronic acid) High moisture retentivity and high penetration</p>
<p>◆ <b>Body spray after taking bath</b> Natural water + 0.5 % solution of Hyalo-Oligo<sup>®</sup> Keeps the skin moisture after taking a bath</p>	<p>◆ <b>Lip water</b> Solution of (Hyalo-Oligo<sup>®</sup> 2% + Hyaluronic acid 1%) Give the moisture to your lip</p>
<p>◆ <b>Liquid foundation</b> Mixing Hyalo-Oligo<sup>®</sup> You don't feel sticky but moist</p>	



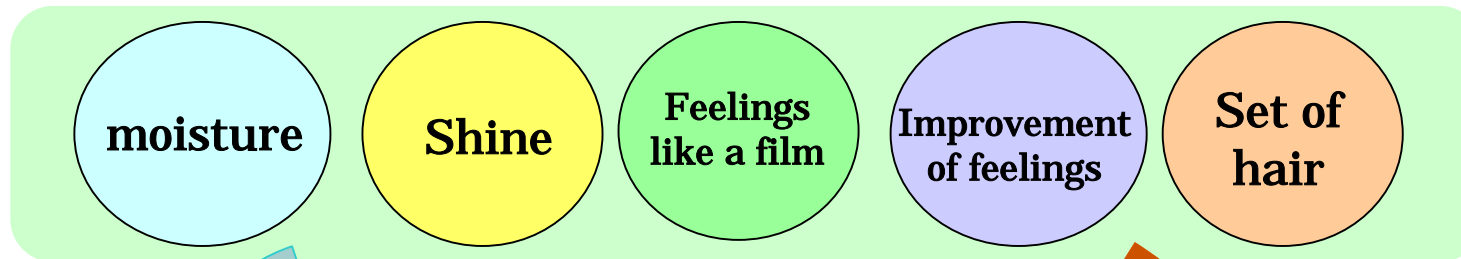
*< Hyalo-Oligo<sup>®</sup> >*

*for hair care*

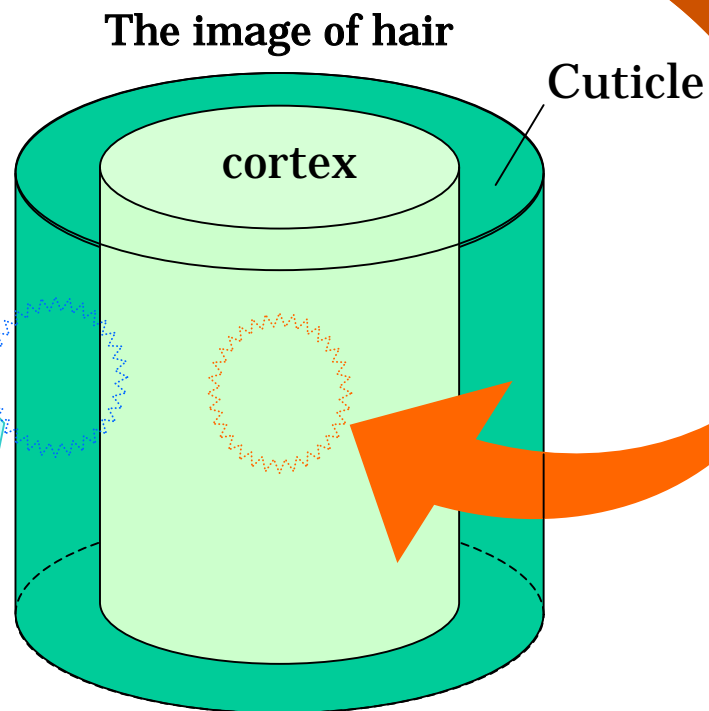
*~High penetration' High moisture retentivity~*



# The effect of Hyalo-Oligo<sup>®</sup> for hair care



Common hyaluronic acid acts on the hair surface.



Hyalo-Oligo<sup>®</sup> penetrates into hair.

Verified by the experiment and the monitor test.



# The penetration test and the questionnaire survey

## ((The penetration test ))

Sample : Damaged hair (Bleached hair)

Treatment liquid : **1% solution of Hyalo-Oligo<sup>®</sup>**

Conditions : 40 × 5, 10, 15 minutes

### Method

Prepare 1% solution of Hyalo-Oligo<sup>®</sup> with the fluorescence label.

Immerse damaged hair into 1% solution of Hyalo-Oligo<sup>®</sup> and warm under the above conditions.

Wash and dry damaged hair

Observe the section of **damaged hair** with a fluorescence microscope.

## ((The questionnaire survey))

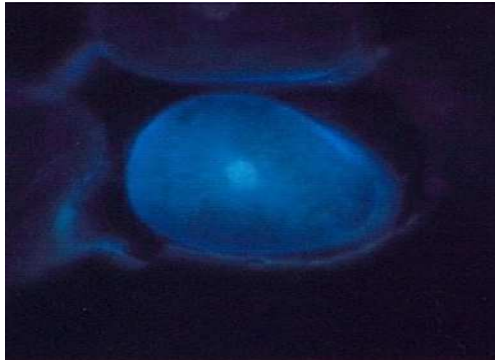
Objects : 18 women aged from 20 to 50

Sample : **1% solution of Hyalo-Oligo<sup>®</sup> (spray)**

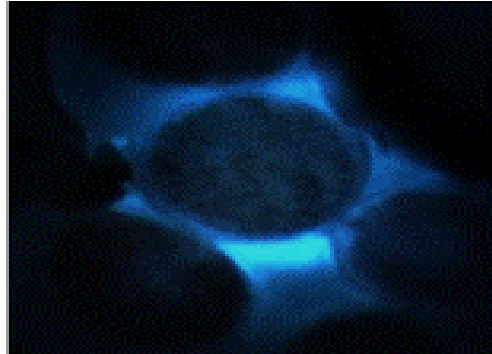
Duration : For 14 days



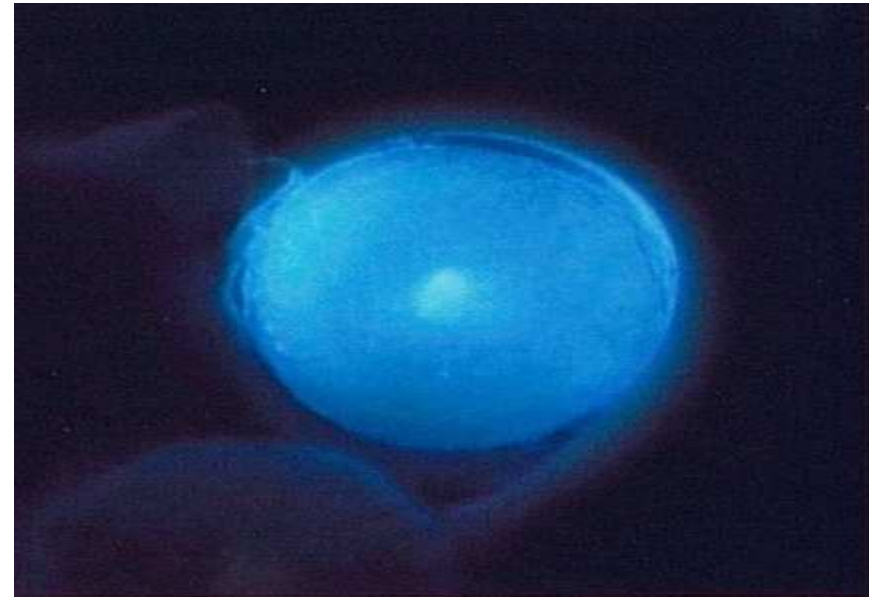
# The data of Hyalo-Oligo<sup>®</sup> penetration into hair



Damaged hair (Control)



Damaged hair (treated with  
common HA: HA-LQH)



Damaged hair treated with Hyalo-Oligo<sup>®</sup>

**The coloring degree** shows **the penetration** of Hyalo-Oligo<sup>®</sup>

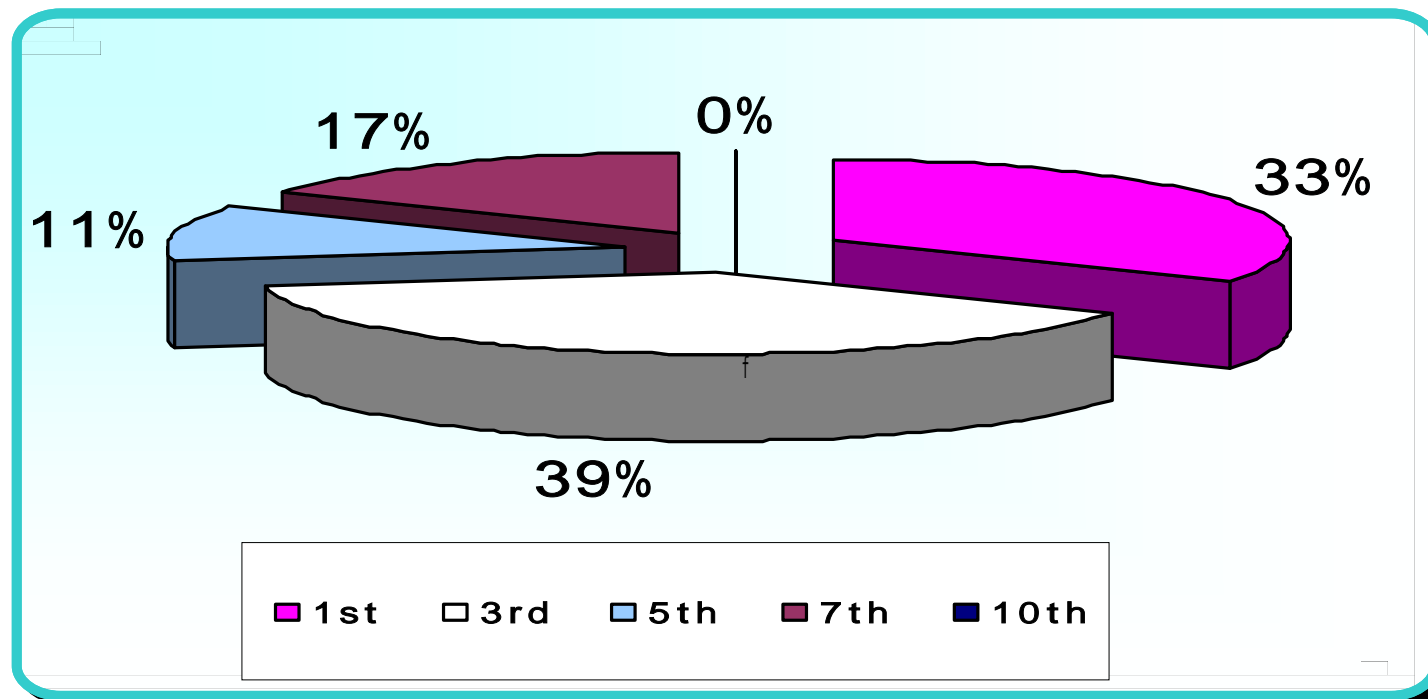
Under the conditions assuming daily shampoo (**40 × 5 ~15 minutes**),  
Hyalo-Oligo<sup>®</sup> penetrated into the **near center of damaged hair**.

# The results of the questionnaire survey

**Times of usage till effectiveness was actually felt  
in terms of improvement of touch, unruly hair**

n = 18 , age 20~50

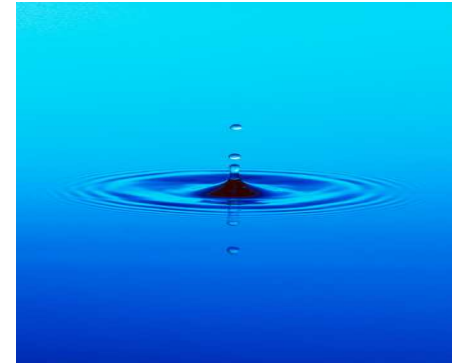
1 % solution of Hyalo-Oligo® was sprayed.



**72% of the people actually felt effectiveness by the 3rd usage.**



# The proposal examples



*You can get **moist** and **flexible** hair*

*by using Hyalo-Oligo<sup>®</sup> (as a moisturizer)*

*that has high penetration ability.*

- Spray mist as moisturizer  
*0.5% solution of Hyalo-Oligo<sup>®</sup>*
- Treatment from inside and outside the hair  
*Solution of (Hyalo-Oligo<sup>®</sup> 0.5% + Common hyaluronic acid 0.5% )*  
*Double effects by two types of hyaluronic acid*