



Hyaluronan Oligosaccharide Assortment (HA4, HA6, HA8, HA10, HA12)

Code#: CSR-93001

Product Name: Hyaluronan Oligosaccharide Assortment

Labeled Amount : 3mg/vial (HA4, HA6, HA8, HA10), 1mg/vial (HA12)

Formular Weight of Sodium Salt: 820.61 (HA4), 1221.91 (HA6), 1623.21 (HA8),
2024.51 (HA10), 2425.81 (HA12)

Storage: below 8°C (Freezable)

Storage conditions:

- 1) To avoid high temperature and high level of humidity and exposure to UV light. Preferably store in the dark.
- 2) Preservation stability varies with pH of the solution and is **lower under alkaline conditions (over pH 8)**. Note the pH of the solvent when dissolving this product.

Note: This product is not sterilized, please use filter (ex. 0.22µm) as you need.

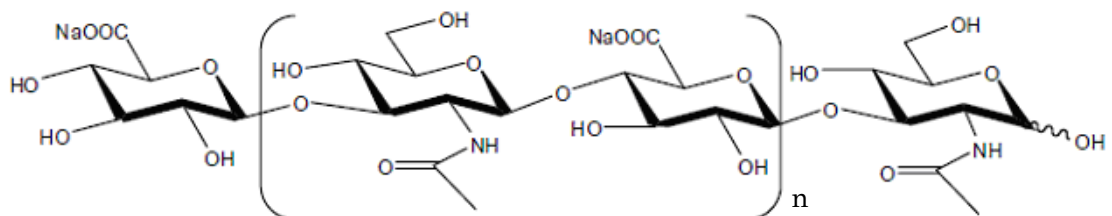
Please pay enough attention to static electricity at the weighing.

Hyaluronan oligosaccharides are known for their various activities depending on the size as reported by Stern R. et al¹⁾. Hyaluronan oligosaccharides are made by an enzyme, hyaluronidase, from hyaluronan polymer extracted from rooster comb or isolated from fermentation products of bacteria. There is a difference between the structure of hyaluronan oligosaccharides made by mammalian enzyme and by bacterial enzyme.

Oligosaccharides made by hyaluronidase derived from bacteria are called “unsaturated” oligosaccharides because of the double bond between C-4 and C-5 position of uronic acid at their non-reducing end. On the other hands, oligosaccharides made by hyaluronidase derived from mammalian testis are called “saturated” oligosaccharide because they have no unsaturated bound.

This product is made from hyaluronan polymer purified from fermentation products of streptococcus sp, by digestion with mammalian hyaluronidase derived from ovine testis, and purified by the column chromatography²⁾. The structure of this product is shown in the chart below.

HA Oligosaccharide: $\text{GlcA } \beta 1 \rightarrow 3 (\text{GlcNAc } \beta 1 \rightarrow 4 \text{ GlcA})_n \beta 1 \rightarrow 3 \text{GlcNAc}$



(n=1~5)

References :

- 1) Stern R, et al.: Eur J Cell Biol, 85, 699 (2006)
- 2) Tawada A, et al.: Glycobiology, 12, 421 (2002)

NOTICE: For R&D use only. Do not use for drug, household, cosmetically and others.

www.cosmobio.co.jp, www.cosmobioussa.com

Mar. 07, 2022



Certification of Analysis

Code#: CSR-11001

Product Name: Hyaluronan Oligosaccharide 4mer sodium salt

Lot No.: 23A798

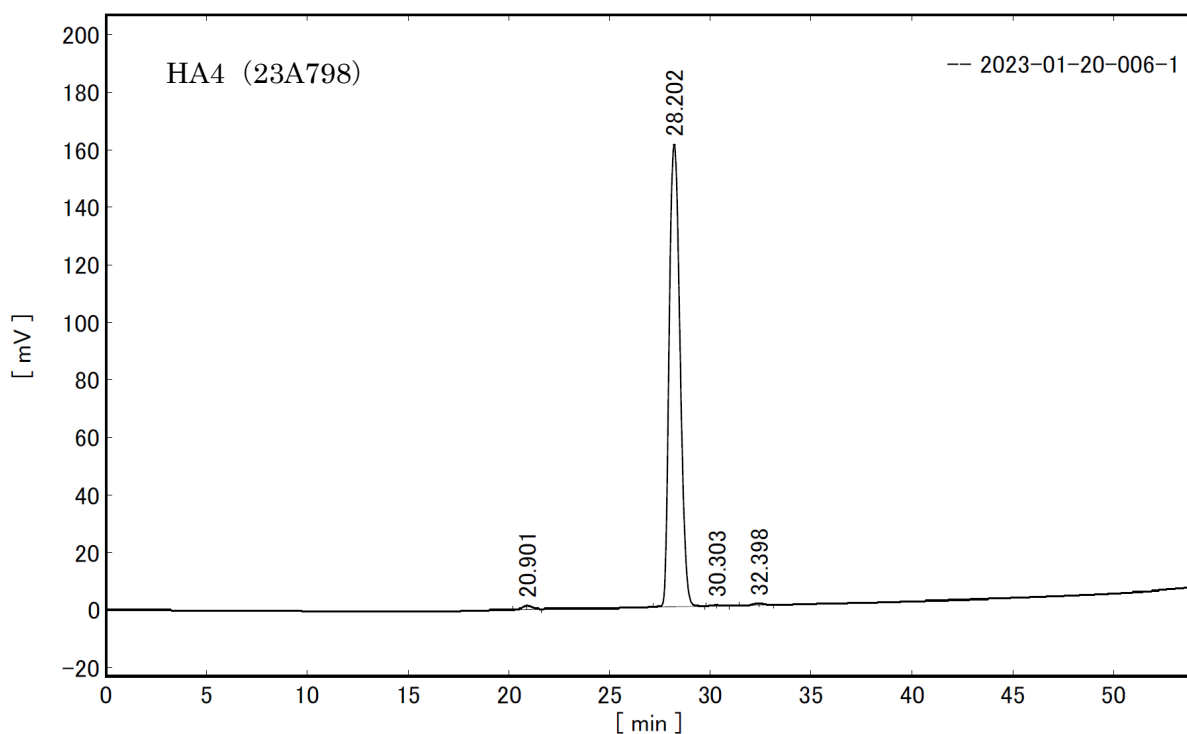
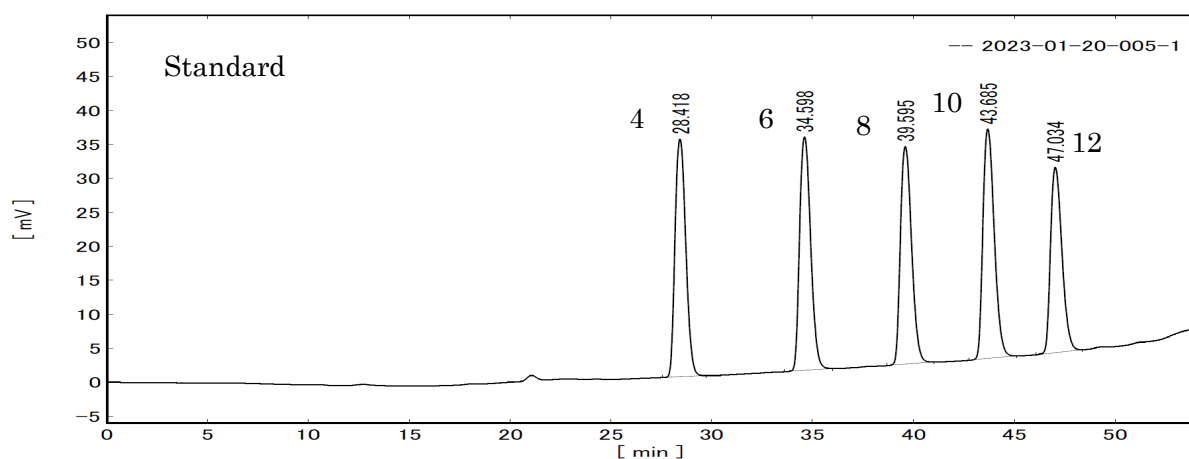
Labeled Amount: 3mg/vial

Date: 2023/01/24

	Result	Specification	Method
Appearance	white amorphous block or powder (lyophilizate)	white amorphous block or powder (lyophilizate)	—
Content	2.9mg/vial	2.7–3.6mg/vial	1)
Purity on Anion Exchange Chromatography at 210nm	98.8%	>90.0%	2)

1) Bitter, T., et al.: Anal. Biochem., 4, 330 (1962)

2) Tawada A. et al.: Glycobiology, 12, 421 (2002)



Elution profile of Hyaluronan Oligosaccharide 4mer sodium salt

Signature :

Satoshi Miyaochi



COSMO BIO Co., LTD.

[JAPAN]

TOYO EKIMAE BLDG. 2-20, TOYO 2-CHOME,
KOTO-KU. TOKYO 135-0016, JAPAN
Phone: +81-3-5632-9610
FAX: +81-3-5632-9619
URL: <https://www.cosmobio.co.jp/>



COSMO BIO USA

[Outside Japan]

2792 Loker Ave West, Suite 101
Carlsbad, CA 92010, USA
email: info@cosmobioussa.com
Phone/FAX: (+1) 760-431-4600
URL: www.cosmobioussa.com

NOTICE: For R&D use only. Do not use for drug, household, cosmetically and others.



Certification of Analysis

Code#: CSR-11002

Product Name: Hyaluronan Oligosaccharide 6mer sodium salt

Lot No.: 20L636

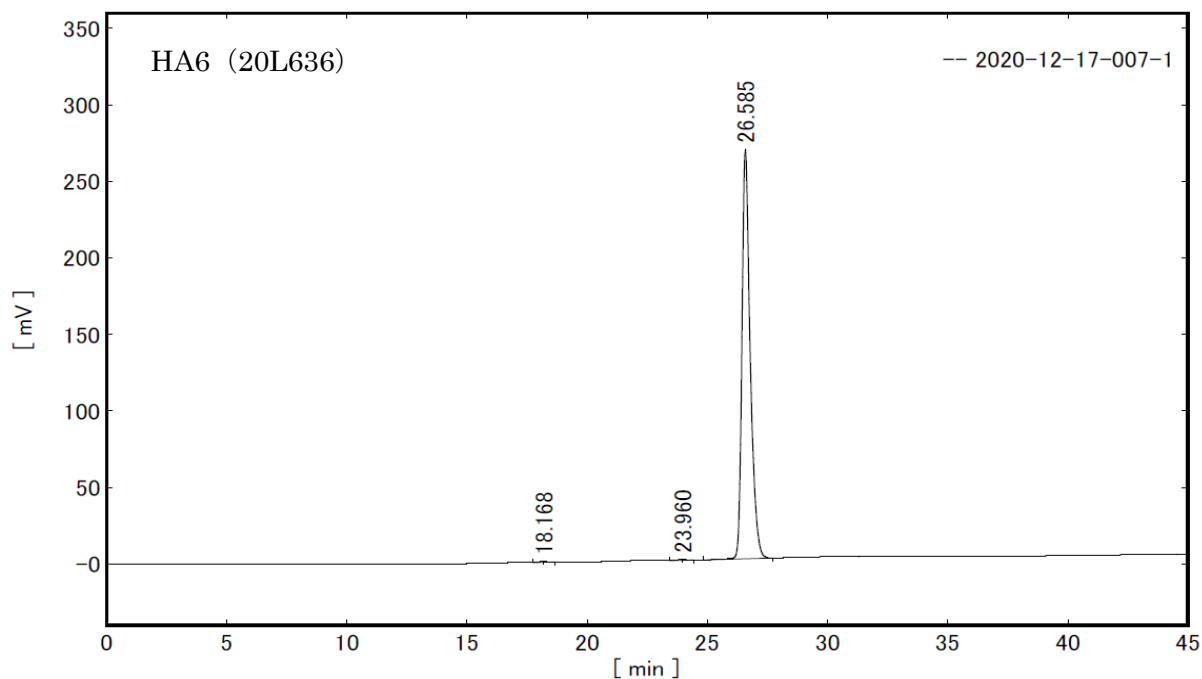
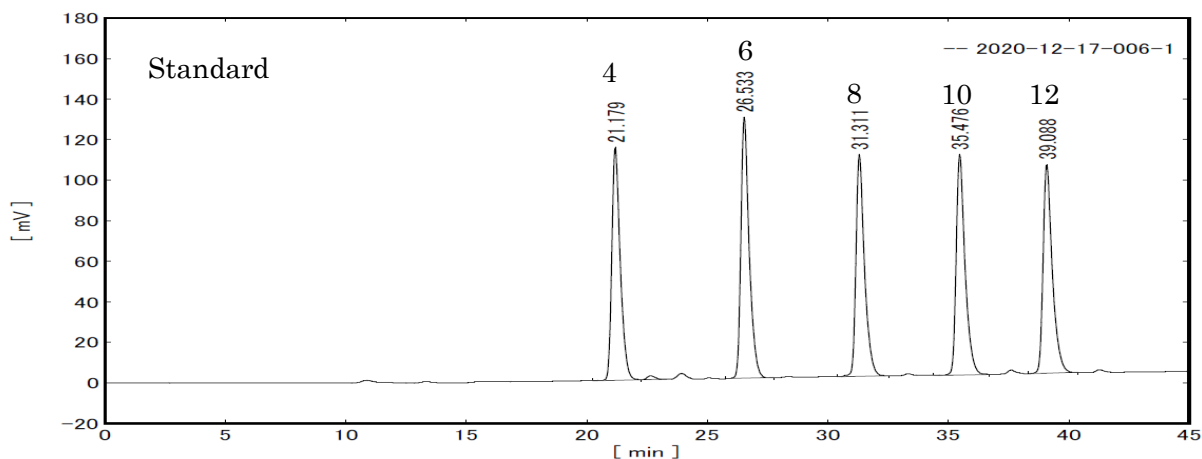
Labeled Amount: 3mg/vial

Date: 2020/12/21

	Result	Specification	Method
Appearance	white amorphous block or powder (lyophilizate)	white amorphous block or powder (lyophilizate)	—
Content	3.5mg/vial	2.7 – 3.6mg/vial	1)
Purity on Anion Exchange Chromatography at 210nm	99.5%	>90.0%	2)

1) Bitter, T., et al.: Anal. Biochem., 4, 330 (1962)

2) Tawada A. et al.: Glycobiology, 12, 421 (2002)



Elution profile of Hyaluronan Oligosaccharide 6mer sodium salt

Signature :

Satoshi Miyauchi



COSMO BIO Co., LTD.

【JAPAN】

TOYO EKIMAE BLDG. 2-20, TOYO 2-CHOME,
KOTO-KU. TOKYO 135-0016, JAPAN
Phone: +81-3-5632-9610
FAX: +81-3-5632-9619
URL: <https://www.cosmobio.co.jp/>



COSMO BIO USA

【Outside Japan】

2792 Loker Ave West, Suite 101
Carlsbad, CA 92010, USA
email: info@cosmobioussa.com
Phone/FAX: (+1) 760-431-4600
URL: www.cosmobioussa.com

NOTICE: For R&D use only. Do not use for drug, household, cosmetically and others.



Certification of Analysis

Code#: CSR-11003

Product Name: Hyaluronan Oligosaccharide 8mer sodium salt

Lot No.: 22B730

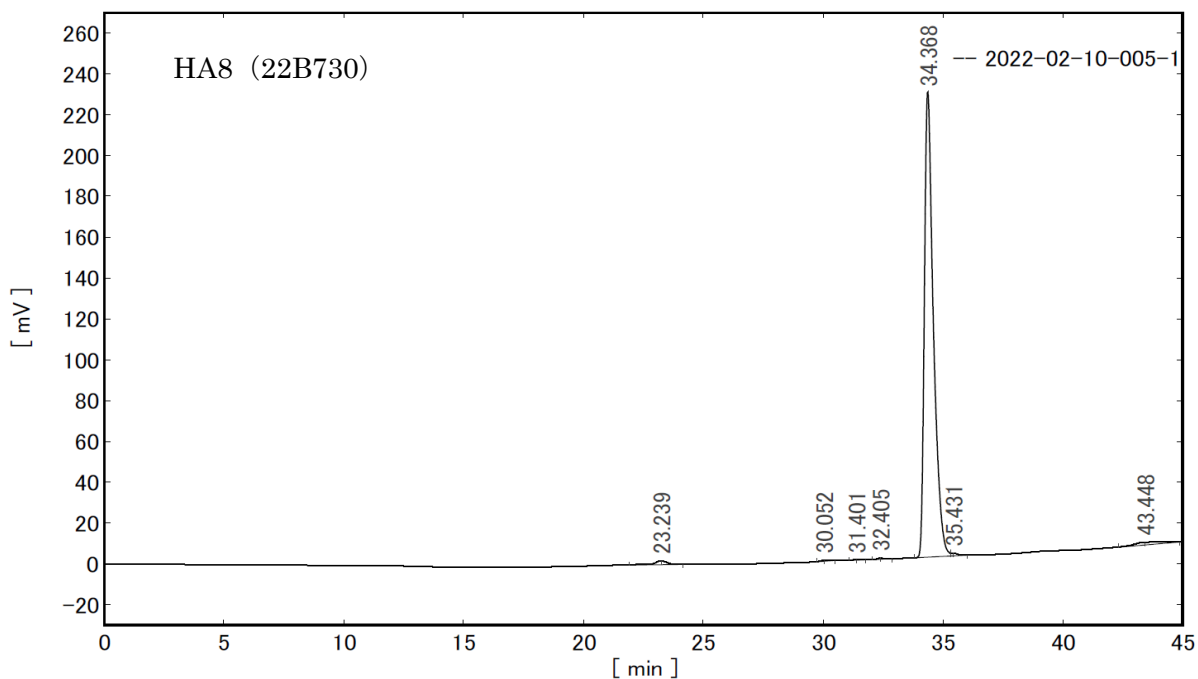
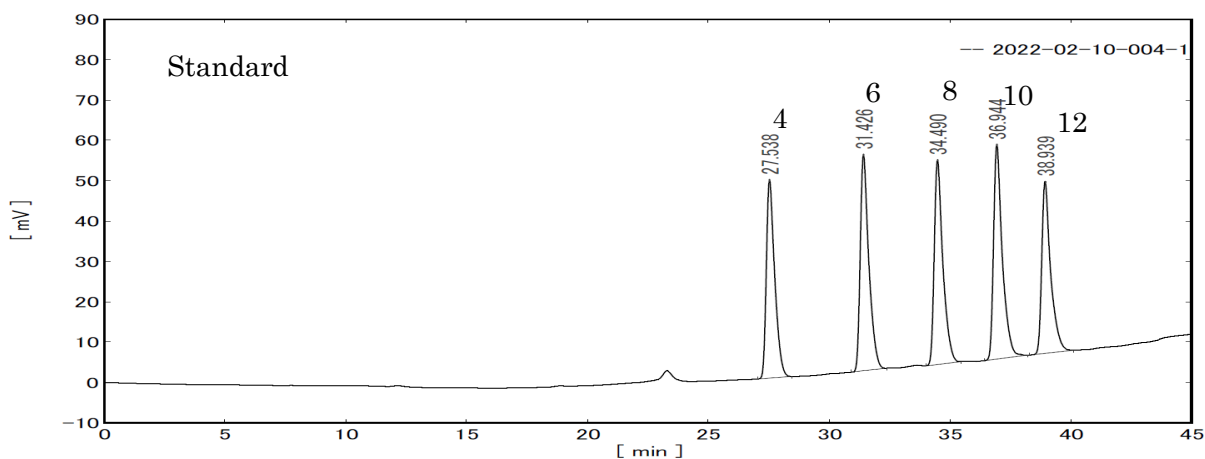
Labeled Amount: 3mg/vial

Date: 2022/02/10

	Result	Specification	Method
Appearance	white amorphous block or powder (lyophilizate)	white amorphous block or powder (lyophilizate)	—
Content	3.3mg/vial	2.7 – 3.6mg/vial	1)
Purity on Anion Exchange Chromatography at 210nm	96.5%	>90.0%	2)

1) Bitter, T., et al.: Anal. Biochem., 4, 330 (1962)

2) Tawada A. et al.: Glycobiology, 12, 421 (2002)



Elution profile of Hyaluronan Oligosaccharide 8mer sodium salt

Signature :

Satoshi Miyauchi



COSMO BIO Co., LTD.

【JAPAN】
 TOYO EKIMAE BLDG. 2-20, TOYO 2-CHOME,
 KOTO-KU. TOKYO 135-0016, JAPAN
 Phone: +81-3-5632-9610
 FAX: +81-3-5632-9619
 URL: <https://www.cosmobio.co.jp/>



COSMO BIO USA

【Outside Japan】
 2792 Loker Ave West, Suite 101
 Carlsbad, CA 92010, USA
 email: info@cosmobiousa.com
 Phone/FAX: (+1) 760-431-4600
 URL: www.cosmobiousa.com

NOTICE: For R&D use only. Do not use for drug, household, cosmetically and others.



Certification of Analysis

Code#: CSR-11004

Product Name: Hyaluronan Oligosaccharide 10mer sodium salt

Lot No.: 21A643

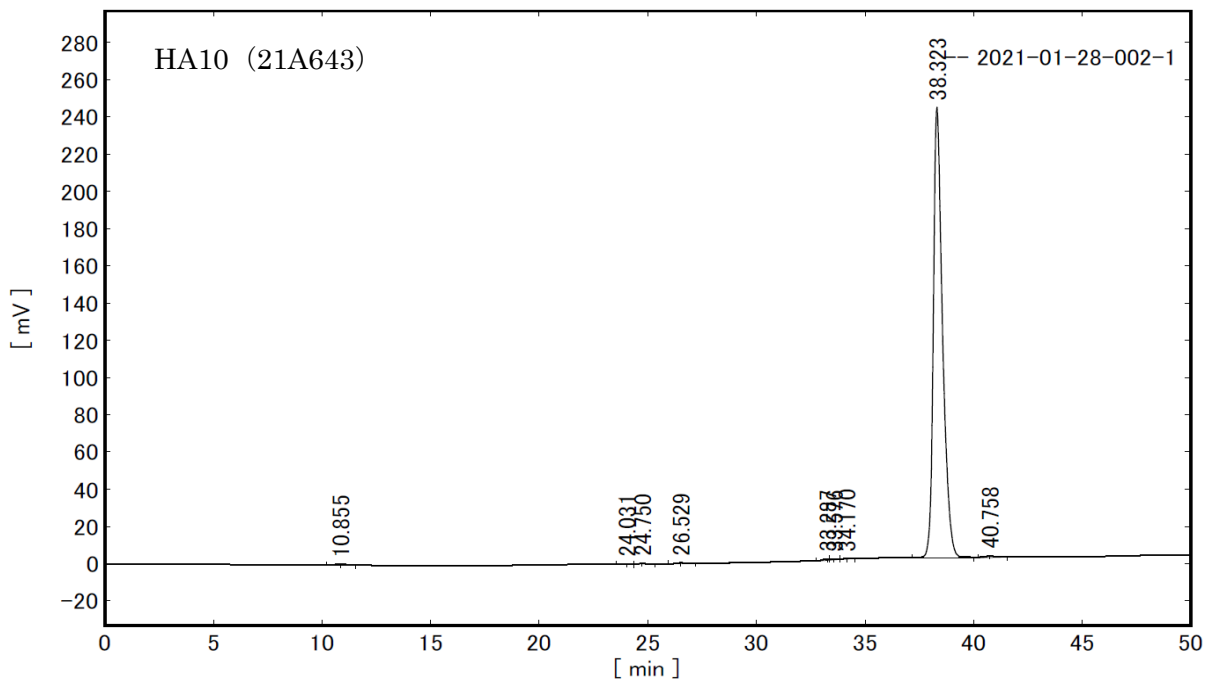
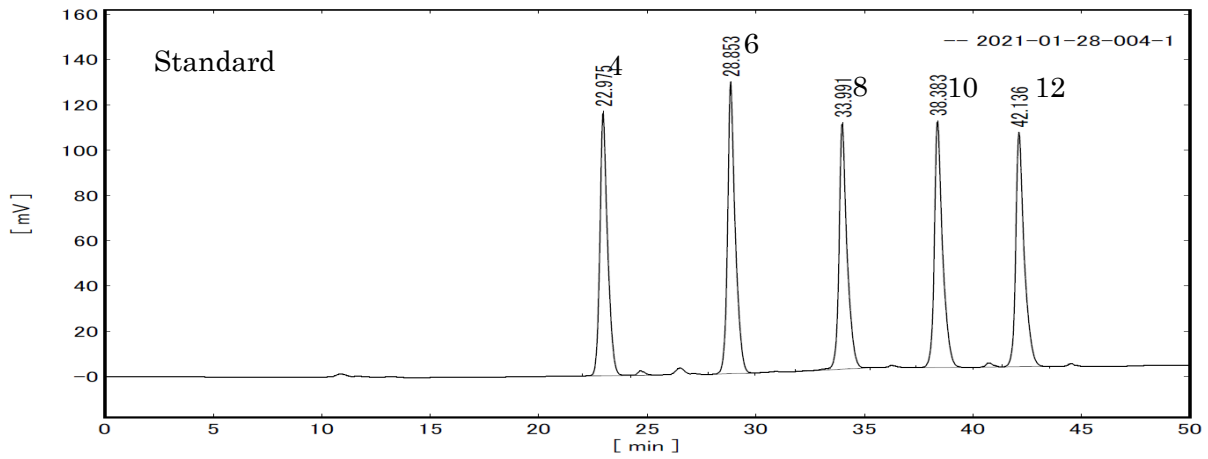
Labeled Amount: 3mg/vial

Date: 2021/01/28

	Result	Specification	Method
Appearance	white amorphous block or powder (lyophilizate)	white amorphous block or powder (lyophilizate)	—
Content	3.3mg/vial	2.7 – 3.6mg/vail	1)
Purity on Anion Exchange Chromatography at 210nm	98.6%	>90.0%	2)

1) Bitter, T., et al.: Anal. Biochem., 4, 330 (1962)

2) Tawada A. et al.: Glycobiology, 12, 421 (2002)



Elution profile of Hyaluronan Oligosaccharide 10mer sodium salt

Signature :

Satoshi Miyauchi



COSMO BIO Co., LTD.

【JAPAN】

TOYO EKIMAE BLDG. 2-20, TOYO 2-CHOME,
KOTO-KU. TOKYO 135-0016, JAPAN
Phone: +81-3-5632-9610
FAX: +81-3-5632-9619
URL: <https://www.cosmobio.co.jp/>



COSMO BIO USA

【Outside Japan】

2792 Loker Ave West, Suite 101
Carlsbad, CA 92010, USA
email: info@cosmobiousa.com
Phone/FAX: (+1) 760-431-4600
URL: www.cosmobiousa.com

NOTICE: For R&D use only. Do not use for drug, household, cosmetically and others.



Certification of Analysis

Code#: CSR-11005

Product Name: Hyaluronan Oligosaccharide 12mer sodium salt

Lot No.: 22G756

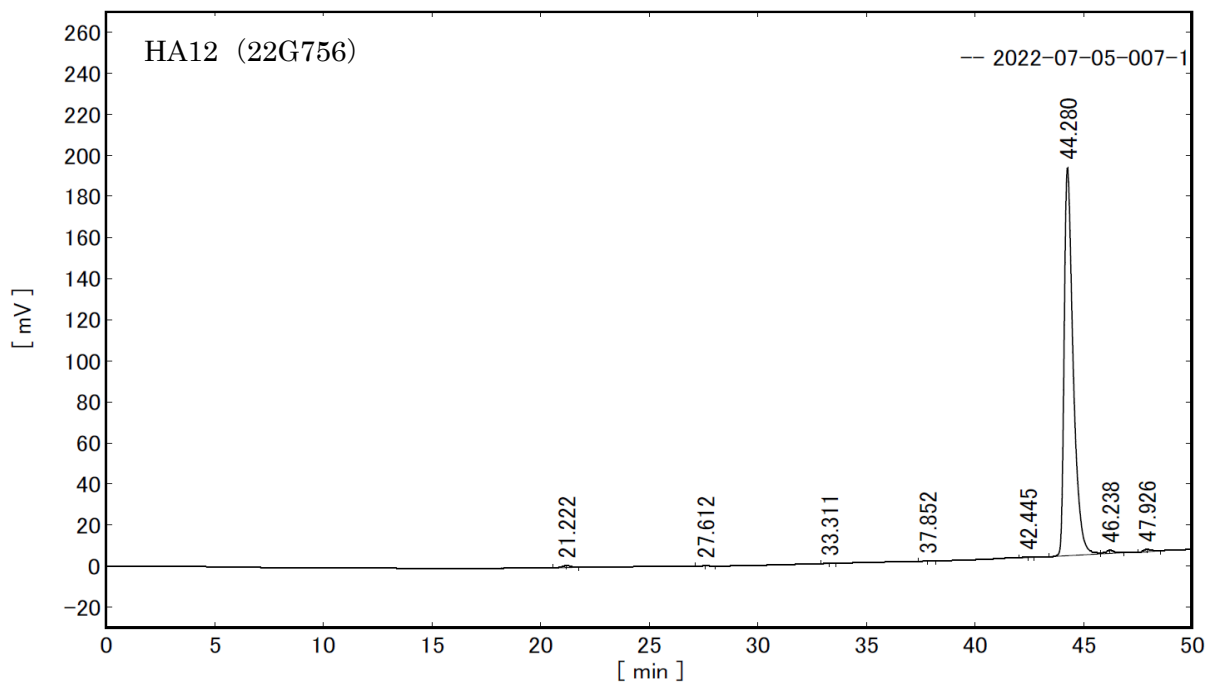
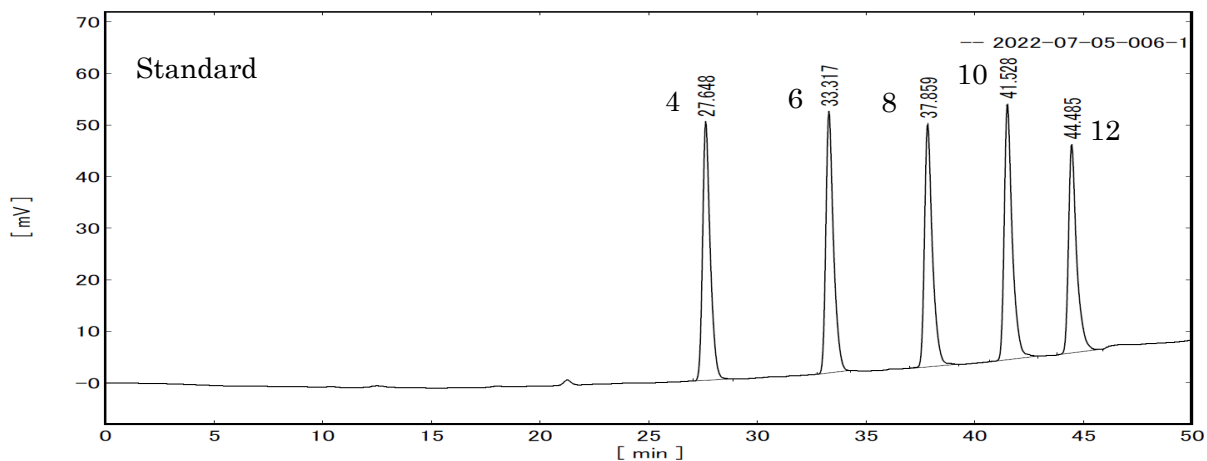
Labeled Amount: 1mg/vial

Date: 2022/07/06

	Result	Specification	Method
Appearance	white amorphous block or powder (lyophilizate)	white amorphous block or powder (lyophilizate)	—
Content	1.1mg/vial	0.8– 1.2mg/vial	1)
Purity on Anion Exchange Chromatography at 210nm	97.7%	>90.0 %	2)

1) Bitter, T., et al.: Anal. Biochem., 4, 330 (1962)

2) Tawada A. et al.: Glycobiology, 12, 421 (2002)



Elution profile of Hyaluronan Oligosaccharide 12mer sodium salt

Signature :

Satoshi Miyauchi



COSMO BIO Co., LTD.

[JAPAN]

TOYO EKIMAE BLDG. 2-20, TOYO 2-CHOME,
KOTO-KU. TOKYO 135-0016, JAPAN
Phone: +81-3-5632-9610
FAX: +81-3-5632-9619
URL: <https://www.cosmobio.co.jp/>



COSMO BIO USA

[Outside Japan]

2792 Loker Ave West, Suite 101
Carlsbad, CA 92010, USA
email: info@cosmobiousa.com
Phone/FAX: (+1) 760-431-4600
URL: www.cosmobiousa.com

NOTICE: For R&D use only. Do not use for drug, household, cosmetically and others.