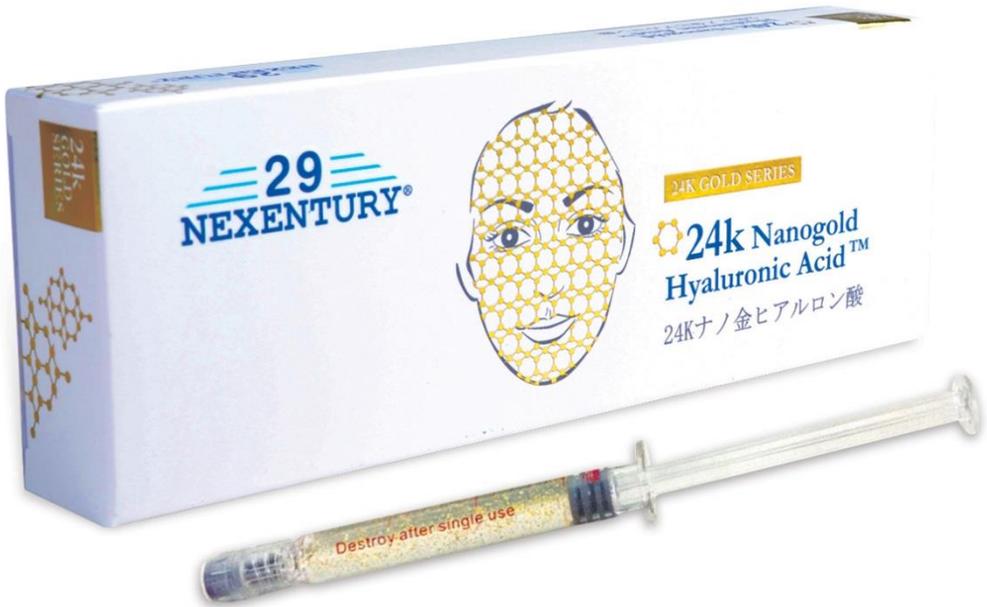


29 NEXENTURY

24k Nanogold Hyaluronic Acid™



Clinical Studies:

The world's only Nanogold Hyaluronic Acid to eliminate wrinkles and restore the golden years.



Professor Takao Hayakawa, 隆夫早川教授

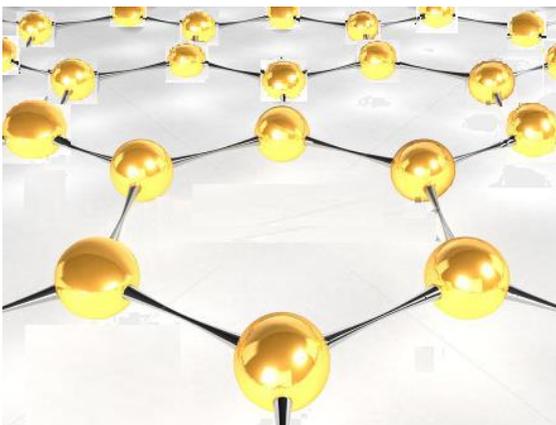
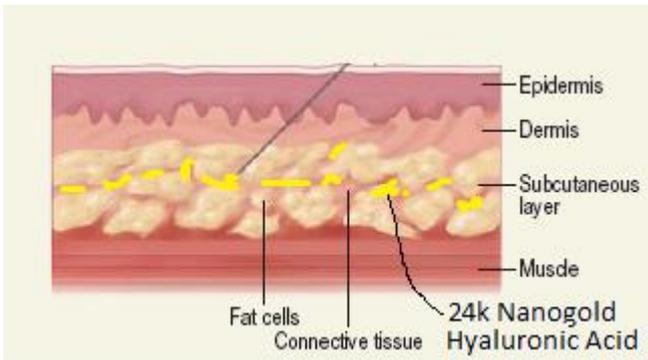
Professor at Pharmaceutical Research and Technology
Institute  **Kinki University, Japan**

“24k Nanogold Hyaluronic Acid™ provides clear anti-aging benefits, dermal rejuvenation and may up-regulate facial skin collagen metabolism,” said Professor Takao Hayakawa. “We are extremely pleased to be releasing the new data on 24k Nanogold Hyaluronic Acid™. The results support the large body of clinical research previously undertaken by Kinki University and underpin the tremendous growth potential that cosmeceutical 24K Gold series offer.”

Osaka, Japan --- Kinki University, a comprehensive university in **Osaka Japan**, Faculty of Biotechnological Science announced the results of a 2010 clinical study that examined the effects of **24k Nanogold Hyaluronic Acid** on the facial skin of healthy women aged 35-65

years. The research was intended to study the effectiveness of **24k Nanogold Hyaluronic Acid™** on facial skin parameters related to cutaneous aging by a randomized, placebo-controlled, double-blind trial.

In a clinical trial, 1000 subjects of different ethnics took part in this 8 weeks clinical study. It is divided into 2 groups, ages of 35-50 years old and 50-65 years old. There are 250 male and female subjects in each group. All subjects of different facial skin type were treated subcutaneously with 3 ml of **24k Nanogold Hyaluronic Acid™** at different wrinkle parts over their face, depending on their complexion. For the ages of 50-65 years old, with one month apart, then continue for a second treatment.





24k Nanogold Hyaluronic Acid™ exists in the space between skin cells and elastic fiber web. It supports the skin cells, help the skin cell to grow and active the skin cells. It enhances the firmness and elasticity.

Results:

After 24 hours, the facial wrinkle skin parts of both age groups improved. Electrical assessment of facial skin hydration showed improvement with healthy condition. The facial skin becomes smooth & soft.

Comparison before and after, the average degree of improvement exhibited between 50-90% , visibly improve facial skin firmness, reduce the appearance of fine lines & wrinkles, anti-aging effect, enhances facial skin elasticity.

For the ages of 50-65years old subjects with lower facial skin quality, also have shown a 50- 80% improvement in facial complexion, has achieved very good, smooth & softening skin significantly. After second time of subcutaneous treatment, 95% of the facial wrinkles & fine lines improved significantly. The efficacies of **24k Nanogold Hyaluronic Acid™** is consistent, which begins from the head, then gradually extended downwards to the face and neck. Electrical assessment of skin hydration showed improvement in 95% of the actively treated subjects.

Overall, there was significant improvements in facial skin texture, tone and smoothness resulting in a more youthful appearance.

On January 27, 2015 the CASSS Board of Directors presented the 4th William Hancock Award for Outstanding Achievements in CMC Regulatory Science to Professor Takao Hayakawa.

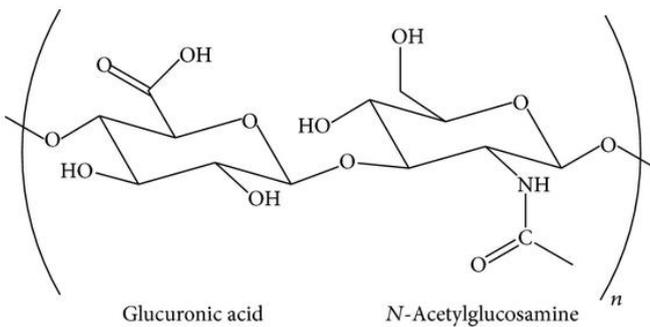
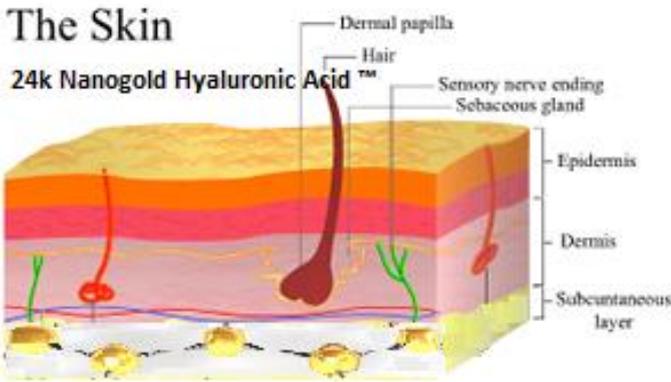
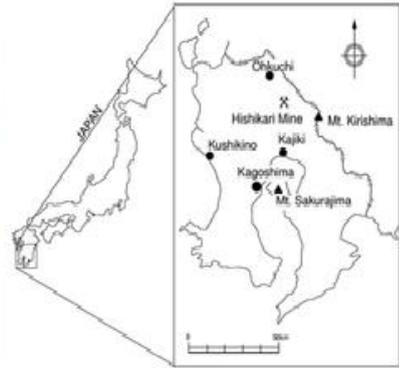


Figure 1: Repeating unit of hyaluronan.

Table 1 : Important events in research on Hyaluronic Acid products

Time	Events	Time	Events	Time	Events
1880	Portes reported that mucin from the vitreous body differs from other mucoids in corneas and cartilage and named it hyalomucine.	1979	First patent on ultrapure hyaluronan isolated from rooster combs [3]. This was the starting of the industrial manufacturing of hyaluronan from animal sources for human applications. In 1980, using the methods of Balazs Pharmacia (Sweden) introduced Healon, a product used in cataract surgery.	2003	Research on the enzymatic synthesis of hyaluronan and monodisperse hyaluronan oligosaccharides with defined length.
1934	Meyer and Palmer isolated and identified the polysaccharide from the vitreous body and named it hyaluronic acid.	90s-00s	Revival of studies on bacterial fermentation to produce hyaluronan of high molecular weight. Emphasis on controlling polymer size and polydispersity.	2012	Japanese researchers mix hyaluronan, colloidal gold, epithelial cells, elastic fibers in vitro, shows activated skin cells, filled up the space & restored fiber web elasticity.
30s-50s	Hyaluronan from many different tissues of vertebrates was isolated, identified, and characterized. A few pathogenic bacteria were found that produce hyaluronan and use it to encapsulate their cells.	1993	The gene encoding for a single enzyme that polymerizes UDP-GlcNAc and UDP-GlcUA into hyaluronan is isolated by DeAngelis and coworkers from Streptococcus pyogenes. Hyaluronan synthases from other microorganisms were identified and characterized.	2014	Together with the help of Japanese scientists, PHRI Bio-Tech has patented & produced their first colloidal gold product to benefit the public.
50s	The chemical structure of hyaluronan was elucidated by Karl Meyer and his team. They used hyaluronidase to produce overlapping oligosaccharides that were structurally analyzed by conventional techniques [4]. Interest emerged to use hyaluronan in eye surgery as a substitute of the vitreous body.	1996	The largest hyaluronan fragment, an octamer, was chemically synthesized through controlled addition of disaccharide units.		
40s-70s	Extraction processes from animal tissues were optimized to remove protein and to minimize hyaluronan degradation. First studies on hyaluronan production through bacterial fermentation and chemical synthesis were initiated.				



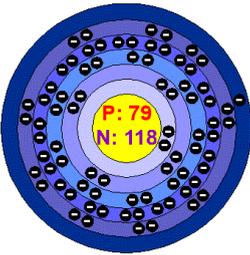


Location of Hishikari gold mine.

Hishikari Gold mine

Hishikari is an adularia-sericite low sulphidation bonanza vein epithermal gold ore body, with one of the highest average grades of gold recorded for a large deposits. It is located approximately 30 km north of the city of Kagoshima on the island of Kyushu in southern Japan.

About Gold :



Basic Information

Name: **Gold.**

Symbol: **Au**

Atomic Number: **79**

Atomic Mass:

196.96655 amu

Melting Point: **1064.43 °C (1337.5801 K, 1947.9741 °F)**

Boiling Point: **2807.0 °C (3080.15 K, 5084.6 °F)**

Number of Protons/Electrons: **79**

Number of

Neutrons: **118**

Classification: **Transition Metal**

Crystal Structure: **Cubic**

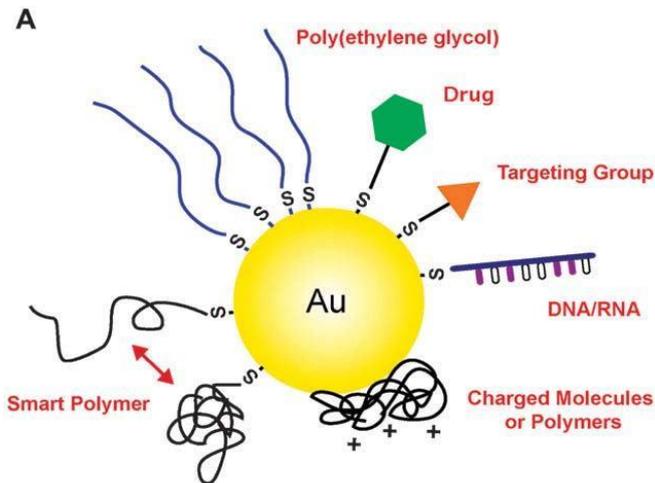
Density @ 293 K: **19.32 g/cm³**

Color: **Gold**

Atomic Structure of Gold (Au) has 6 energy levels.

Gold surface chemistry

Gold nanostructures can be conjugated with a wide variety of functional moieties.



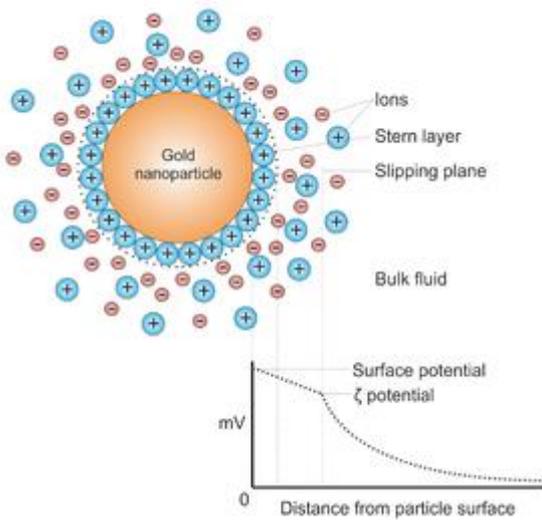
Ever since its introduction, gold has always been at the center of every civilization and is known to have great intrinsic value. Gold is considered to be one of the easiest metals to work with, something that made it a popular form of jewelry throughout the ages.

Traces of gold usage go way back in time, literally to the time of the ancients. Paleolithic Man found natural gold in Spanish caves around 40,000 BC. Other records

that describe uses of gold were recorded at around 6,000 BC. Other fragments of its discovery can be found in the Egyptian empire of 3,000 BC.

However, history also records that gold was considered to be one of the best ingredients for skin care across civilizations as well. A more direct use of gold in skin care can be traced to the Egyptian civilization. Cleopatra, the famous Egyptian queen, known for goddess like beauty, was rumored to use gold face masks to preserve the her surreal beauty and flawless complexion. Mentions of gold in skin care can also be found in ancient Chinese civilizations, many empresses used crushed gold in their skin care routines to enhance their beauty.

Synthesis



Potential difference as a function of distance from particle surface.

Generally, gold nanoparticles are produced in a liquid ("liquid chemical methods"). As more and more of these gold atoms form, the solution becomes supersaturated, and gold gradually starts to precipitate in the form of sub-nanometer particles, fairly uniform in size.

To prevent the particles from aggregating without using stabilizing agent, 24k Nanogold Hyaluronic Acidgold colloids can be synthesised by laser ablation in liquids. They can be functionalized with various organic ligands to create organic-inorganic hybrids with advanced functionality.

24k Nanogold Hyaluronic Acid promotes skin regeneration, supports skin's natural collagen, visibly improve skin firmness, reduce the appearance of fine lines & wrinkles, anti-aging effect, enhances your skin elasticity for a radiant looks.

Summary

24k Nanogold Hyaluronic Acid™, one of the research & development PHRI Bio-Tech works together with Japanese experts and being a global agency.²⁹ Nexentury safe & genuine 24k Gold Series products conform to Japan and international standards of purity, safety and responsible manufacture. Production according to cosmetic GMP guarantees.

To sum up the **24k Nanogold Hyaluronic Acid™** experience, it would be safe to say that it is not just about the products. It is our commitment to offer customers unmatched solutions. The 29 Nexentury products experience ensures that customers can choose products based on what best suits their requirements.

29 Nexentury- 24k Gold Series, is one of the few facial cosmetic lines that concentrates on the use of gold as a phenomenal skin care solution and each of our products aims to help our customers fight the signs of aging. Constant innovation in our products and a highly skilled research and development team also allow us to offer our consumers with the very best skin care products that redefine the phrase “value for money”.

The most commendable achievements of this study is, with our effort, what used to be regarded as impossible had come true, where we have proven able to help aging wrinkled people miraculously get beautiful facial complexion. In 2010, after the success of research and

development, PHRI BioTech finally launched it into market in 2015. The followings are before and after comparisons of different ethnic groups in which experienced the **24k Nanogold Hyaluronic Acid™**.



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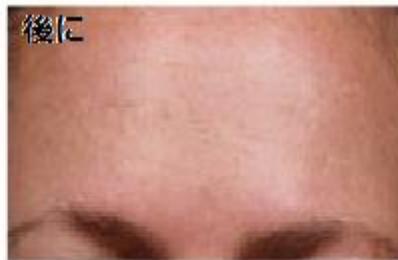


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5 **PDF] ChemSoc Rev TUTORIAL REVIEW - Optical Imaging**

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Gold nanostructures can be conjugated with a wide variety of functional moieties, both through the gold–thiolate bond and by passive adsorption.