

# 2018 The Clinical Test of Nano gold Cosmetic

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## The Clinical Test of Nano gold Cosmetic for Recovering Skin Damage Due to Chemicals: Special Case

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**Abstract.** Manufacturing of Nano gold cosmetics was done at PT. Gizi Indonesia. Clinical trials to cosmetics data supported that cosmetics are able to treat skin health which has been reported partially. For special cases, the recovery process of facial skin damage should also receive attention including cases of facial skin damage caused by chemicals such as *phenol*, *HCl*, *aqua regia* or other harsh chemicals. The problem determined whether the Nano gold is able to recover skin damage due to the harsh chemicals. This clinical trial data on the forms of early skin damage caused by *phenol* was delivered in the forms of facial photos patients. The recovery progress of facial skin condition was obtained every week for two months. The data included the forms of widespread wounds during the recovery process. This statement supported by *anova statistical* analysis of the widespread wound changing every week for 8 times. The conclusion is skin damage due to Phenol impregnation can be recovered with the use of Nano gold cosmetics for 8 weeks. This results support the manufacturing of Nano gold cosmetics for the needs of society. It also suggest that Nano gold material can be used for medicine manufacturing in the future.

### 1. Introduction

The empirical data of Nano gold as essential material in anti-aging cosmetics has been investigated in past researches. For example, the data of Nano gold activity as free radical scaffolding used diphenyl picryl hidrazil (DPPH) free radical test material [1, 2]. Pre-clinic test of Nano gold using mice as animal test showed that Nano gold increases fibroblast proliferation and collagen biosynthesis [3]. The activity test of Nano gold at organ wound healing showed that Nano gold increases collagen quantity and cell proliferation in liver, kidney and brain [4].

The fact that Nano gold supports enzyme as co-enzyme that catalyses many enzymatic reaction in collagen biosynthesis and cell proliferation [5]. This statement can be used as a basic of wound healing including skin aging, skin destroying caused heating, disease or exposed chemical material [6]. Recently many crime cases that occur related to chemical material usage [7]. That was correlated to easiness of having dangerous chemical materials. Criminals may sprinkle the chemical material in the face skin to attack the target or victim. Human as target of the crime was not ready to protect his/her body or skin [8]. If the handling of this case was not fast, it may cause the chemical mamany layer of tissue. The dangerous material are acid of chloride, sulphate, nitric, aqua-regia and phenol [9].

The accident with dangerous chemical often occurs in laboratory and many other places. The accident leaves scars that cannot recover by conventional medicine, hence causes the problem. It is



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necessary to receive something or material for resolving the bad effects. This research aims to solve the problem of skin damage caused by the phenol. Nano gold in the cosmetics formulation can be used for this skin recovery to normal condition [9]. Medical reports of volunteer wound healing are the main research data. The data analysis follows the picture analysis with imaging program. The fast picture of volunteer face is used as standard picture that the next picture will be compared with. The next pictures will be collected at periodical time in the range one week. The decrease area of wound indicates that recovery process occurs. The significant decrease area of wounds is concluded by statistical analysis Anova.

## 2. Method

Materials used in this research are standard materials in cosmetics formulation; that is, Stearic Acid, Lexemul CS-20, Beeswax, Laurex, Olive Oil, Dimethicone 100 cps, Methyl paraben, Propyl paraben, TiO<sub>2</sub>, Butyl Hidroxy Toluen (BHT), Emulgent T, Mono Propilen Glycol (MPG), PG Helm, Aquadest, Aloe Vera, anti-UV B ; Octhyl para-methoxy cinnamate (OMC) and Nano gold.

For preparing the Nano gold face cream we follow the sequence of steps: (1) put Stearic Acid, Lexemul CS-20, Beeswax, Laurex, Olive Oil, Dimethicone 100 cps, Methyl paraben, Propyl paraben, TiO<sub>2</sub>, and Butyl Hidroxy Toluen (BHT) in a bowl, (2) melt this mixture and boil the aquadest, (3) prepare Emulgent T, Mono Propilen Glycol (MPG), PG Helm and add the boiling aquadest, (4) mix the melted mixture and solution in a big bowl and stir these until forming a cream, and (5) after the cream is warm, add Aloe-vera extract, anti-UVB; Octhyl para-methoxy cinnamate (OMC) and Nano gold.

The volunteer was a man who exposes a phenol at face area. His face divides into three areas, left cheek, right cheek and the neck. Nano gold cosmetics or cream used were day cream and night cream. Day cream was applied in the morning in all face area and the neck. Then in the night applied the same areas with night cream. This treatment would be done every day and the pictures of the face was taken every week for 4 weeks [3]. The fast picture was used as a benchmarking picture. The collected data were pictures of volunteer face being taken every week. The pictures then were analyzed with imaging program. The quantitative data that resulted from imaging program then were computed statistically with SPSS program.

## 3. Result and Discussion

The data from week-0, week-1, week-2, week-3 and week-4 are shown in Picture 1. The area of wound healing process is marked and its area is computed. The pictures then are analyzed with imaging program. The basic of imaging program method is to compute the needed inclusive area by measuring the number of pixels of the picture. The computed areas change every day because recovery process occurs. Recovery process showed decreasing areas of the wound. Wound healing that occurred in this research showed by comparing quantitative areas every time. The analysis was done every week until four weeks. The decreasing areas indicated that wound healing process occurred. This progress can be shown Figure 1 that at the beginning picture at week-0 column faster than that at week-4 column.

By using the program, the pictures resulted in quantitative data shown in Table 1. From these decreasing areas we compared the areas of week-0 with week-1, then week-1 with week-2 and so on. These decreasing areas were very clear, but we still used statistic program to show the significant level of data. The quantitative data in Table 1 that resulted from imaging program was then computed using statistic with SPSS program.

A r e a	Week-0	Week-1	Week-2	Week-3	Week-4
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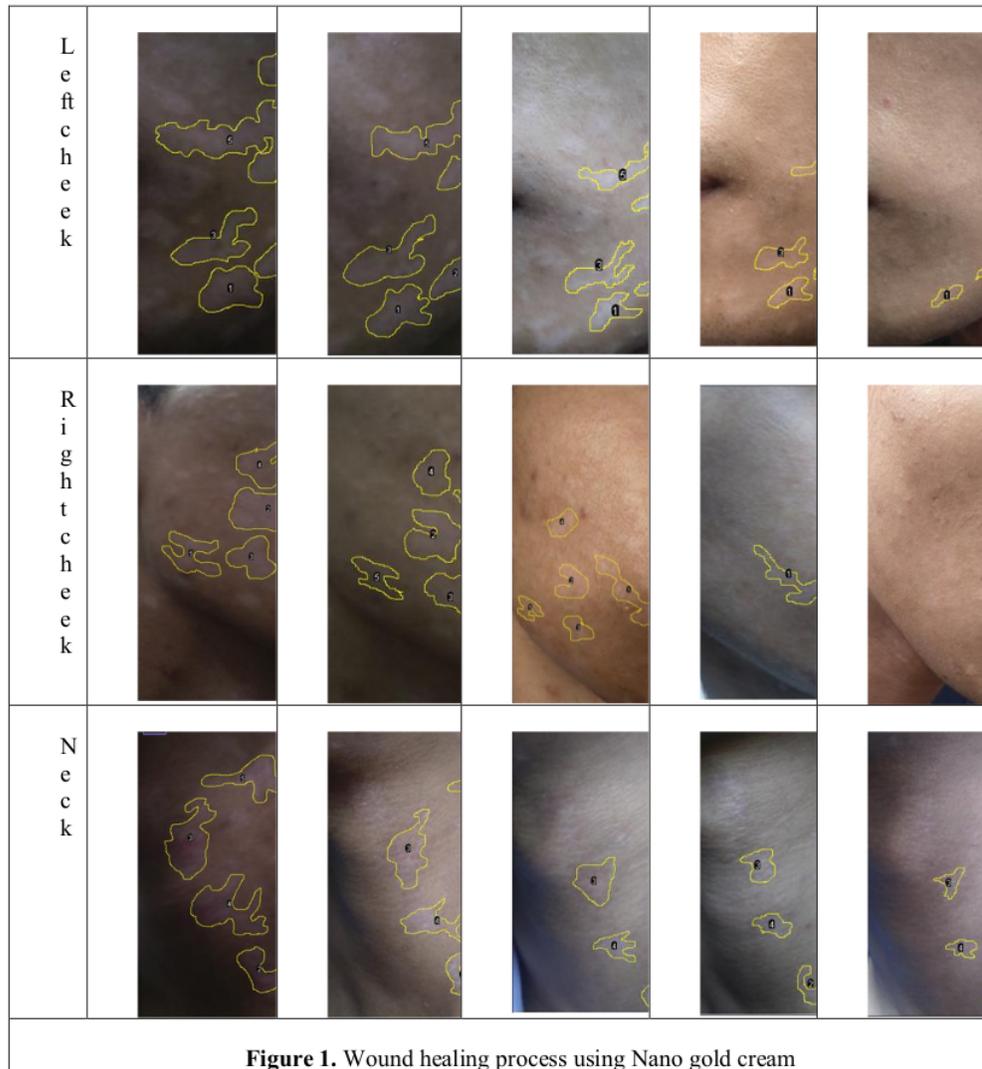


Figure 1. Wound healing process using Nano gold cream

Table 1. Week-based wound healing areas of volunteer face skin

Area mm <sup>2</sup>	Week-0	Week-1	Week-2	Week-3	Week-4
Left cheek	9.73E+02	8.88E+02	1.53E+02	4.21E+02	0.00E+00
	9.00E+02	6.71E+02	8.16E+01	0.00E+00	0.00E+00
	4.83E+02	4.54E+02	5.35E+01	0.00E+00	0.00E+00
	5.14E+02	3.99E+02	6.14E+01	0.00E+00	0.00E+00
	4.82E+02	2.99E+02	3.12E+01	0.00E+00	0.00E+00
Right cheek	4.06E+06	5.37E+02	8.64E+01	5.19E+01	1.23E+02
	3.25E+06	3.61E+02	6.13E+01	3.56E+01	8.16E+02
	4.11E+06	7.38E+02	9.23E+01	7.28E+01	0.00E+00

	6.73E+06	3.51E+02	8.12E+01	6.54E+01	0.00E+00
	1.05E+11	9.98E+02	2.10E+02	1.31E+01	0.00E+00
Neck	5.07E+06	2.38E+06	4.90E+05	1.02E+02	6.35E+01
	3.36E+06	1.98E+06	2.40E+05	5.28E+01	4.56E+01
	7.13E+06	4.38E+06	7.69E+05	1.65E+02	7.39E+01
	7.58E+06	2.99E+06	3.87E+05	1.57E+02	5.67E+01
	5.07E+06	2.74E+06	4.45E+05	7.03E+01	3.01E+01

By SPSS statistic it shows that at 95% confidence with 0.05 margin error there is a decreasing areas with different significance every week at neck data. Left cheek and right cheek give the same condition giving decreasing areas with different significance occurred too in this area. The other case, wound healing caused by mercury exposure in cosmetics formulation had be done [10]. Mercury caused more destructions in cell metabolism than recovery by Nano gold [11]. Nano gold was used for neurotoxic recovery that is caused by mercury [12]. This computation supports the fact that the volunteer face skin condition that has recovered after 4 weeks is near normal condition. Spots that ever follow after every wound healing process may not occur in this case. It is an important notice in this research. This statement is very important to ensure that Nano gold can be used in medicinal material in the future as impact of this research.

#### 4. Conclusions

Nano gold in cosmetic formulation can be used to recover wound caused by phenol exposure. Step by step wound healing process for 4 week recovery results in a near normal condition. Impact of this result is that Nano gold is a material suitable for medicinal material in the future.

#### References

- [1] Taufikurohmah T, Sanjaya I G M, Baktir I, and Syahrani A 2012 Activity Test of Nano gold for Reduction of Free Radicals, a Pre-Assessment Utilization Nano gold in Pharmaceutical as Medicines and Cosmetics *Journal of Material Science and Engineering* **2** 12 pp611–617,
- [2] Ananthi T and Chitra M 2013 In vitro Evaluation of Antioxidant Activity of Michelia champaca (L.) Flowers *American Journal of Advanced Drug Delivery*
- [3] Taufikurohmah T, Winarni D, Baktir A, Sanjaya I G M, and Syahrani A 2013 Histology Study: Pre-Clinic Test of Nano gold in Mus Musculus Skin , at Fibroblast Proliferation and Collagen Biosynthesis *Res. J. Pharm. Biol. Chem. Sci.* **3** 5 pp55–61
- [4] Taufikurohmah T, Sanjaya I G M, Baktir A, and Syahrani A 2016 HISTOCHEMICAL CHANGES LIVER AND KIDNEY OF MICE EXPOSED TO MERCURY AND RECOVERY WITH NANO GOLD *Jurnal Molekul* **11** 1 pp. 80–91
- [5] Tsai C Y, Shiau A L, Chen S Y, Chen Y H, Cheng P C, Chang M Y, Chen D H, Chou C H, Wang C R, and Wu C L 2007 Amelioration of collagen-induced arthritis in rats by Nano gold *Arthritis Rheum.* **56** 2 pp544–554
- [6] MacNeil S 2008 Biomaterials for tissue engineering of skin *Materials Today* **11** 5 pp26–35
- [7] Tulaihi B Al and Alhabib S 2015 Uncertainties around incretin-based therapies: A literature review *Saudi Pharm. J* **25** 1 pp1–7
- [8] Michael S, Sorg H, Peck C T, Koch L, Deiwick A, Chichkov B, Vogt P M, and Reimers K 2013 Tissue Engineered Skin Substitutes Created by Laser-Assisted Bioprinting Form Skin-Like Structures in the Dorsal Skin Fold Chamber in Mice,” *PLoS One*, vol. 8, no. 3, 2013.
- [9] T. Taufikurohmah, A. Soegianto, I. G. M. Sanjaya, A. Baktir, and A. Syahrani,

- “Mercury exposure effects to skin tissue of mus musculus at fibroblasts cell proliferation and collagen quantity,” *Res. J. Pharm. Biol. Chem. Sci.*, vol. 4, no. 4, 2013.
- [10] Bourdineaud J, Laclau M, Maury-brachet R, and Gonzalez P 2012 Effects of Methylmercury Contained in a Diet Mimicking the Wayana Amerindians Contamination through Fish Consumption: Mercury Accumulation, Metallothionein Induction, Gene Expression Variations, and Role of the Chemokine CCL2 no. June, pp. 7710–7738
- [11] Murai T, Sato M, Nishiyama H, Suga M, and Sato C 2013 Ultrastructural analysis of Nano gold-labeled cell surface microvilli in liquid by atmospheric scanning electron microscopy and their relevance in cell adhesion *Int. J. Mol. Sci* **14** 10 pp. 20809–20819
- [12] Martinez-finley E J and Aschner M *Recent Advances in Mercury Research* pp163–171, 2014.

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