LYCORIS Co., Ltd.

Project Name (Ingredient and semi-finished products Name):
Horse placenta hydrolysate extract or placenta toner, crystal gel and cream formulation **Scientific name of active ingredient:** Comprises amino acids and active ingredients (not specific material but extract formulation)
Product Summary
Horse placenta extract generated through several steps of process after collecting fresh placenta from Halla horse of clean Jeju Island. Its main ingredients include amino acids and active ingredients. The colorless and odorless state of this ingredient used as a raw material for food and cosmetics is the best manufacturing technology possessed by only Lycoris Co., Ltd. In addition, the placenta crystal gel and cream available as formulation materials, semifinished cosmetics, are excellent materials for whitening and anti-aging(wrinkle improvement).

1. Efficacy and functionality supporting data

- Action Mechanism

  The horse placenta extract and formulation ingredient have

  1) Whitening : Has an effect inhibiting activity of tyrosinase, which promotes generation of melanin granules from tyrosine, so not only inhibits pigment development and promotes discharge of cells containing melanin pigment .

  2) Wrinkle improvement: Restores skin flexibility and elasticity to improve deep wrinkles and drooping skin by generating healthy derm from increase of collagen, elastin, and hyaluronic acid through promotion of regeneration.

- Chemical feature data:

<Ingredient content of horse placenta>

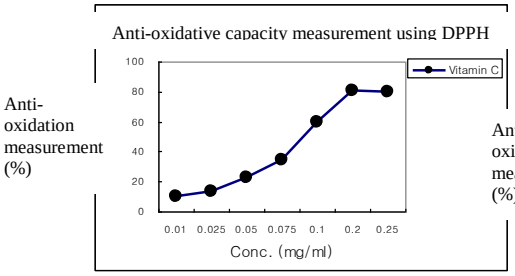
Composition	**Percentage(%)**
1. Amino acid	83.300
2. Growth factor	1.050
3. Cytokine	0.230
4. Glycosaminoglycans	3.420
5. Uronic acid	0.110
6. Collagen peptide	4.340
7. Chondroitin sulfate	2.350
8. Sialic acid	0.040
9. Hyaluronic acid	3.800
10. Others	1.360
Total	**100.00**

<Amino acid contents of horse placenta extract>

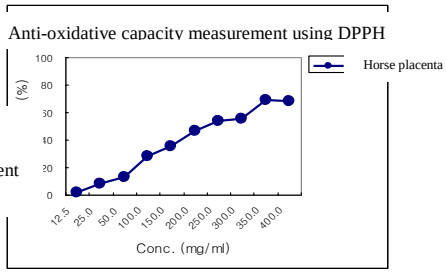
Ingredients	Contents	Functions
1. Arginine	8.32	erection promotion, concentration improvement, nutrition
2. Lysine	5.03	Body fat loss
3. Histidine	4.02	fat combustion, blood circulation promotion
4. Phenylalanine	3.44	appetite inhibition, metabolism enhancement
5. Tyrosine	2.03	concentration improvement, promotion of growth hormone secretion, erection promotion
6. Leucine	6.49	fatigue restoration, muscle strengthening
7. Isoleucine	2.47	fatigue restoration, muscle strengthening
8. Methionine	1.21	fat digestion
9. Valine	4.07	growth promotion
10. Alanine	8.47	nutrition, fat combustion
11. Glycine	18.05	maintaining of skin elasticity, anti-aging, muscle strengthening
12. Proline	10.31	major ingredient of collagen
13. Glutamic Acid	10.21	promotion of fatigue restoration, inhibition of carbohydrate absorption
14. Serine	4.36	nerve cell activation, making skin glossy
15. Threonine	3.00	growth promotion, fatty liver inhibition
16. Aspartic Acid	7.79	Promotion of liver function, fatigue restoration, physical strength enhancement
17. Cystine	0.73	whitening (inhibition of melanic pigment)
Total	**100.00**	

○ *In vitro* Bio-assay Data

1) Anti-oxidative capacity test (*In Vitro* electron donating ability measurement)



Vitamin C (Standard)

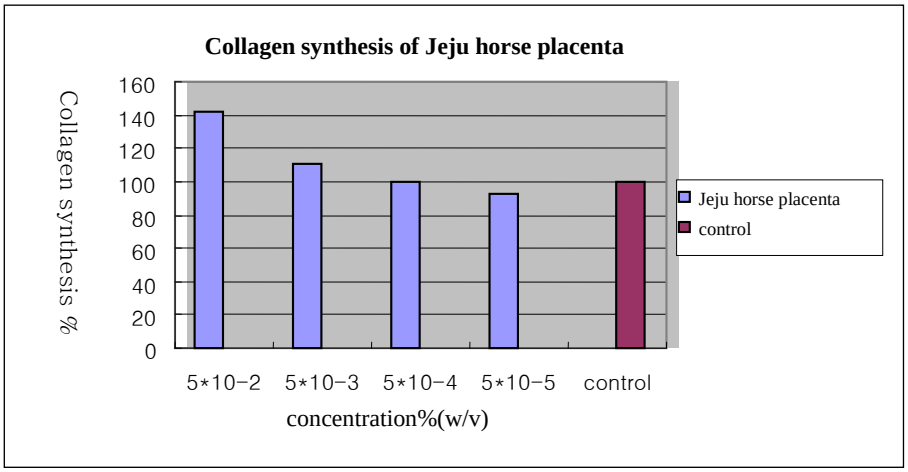


Horse Placenta Extracts

Anti-oxidative effect test (free radical removing activity using DPPH method) with 10 types of diversified sample concentration such as 100, 75, 50, ·····, 0.5, 0.25mg/ml (the concentration of original sample solution was set to 100mg/ml) resulted that

- the sample horse placenta showed similar graph to that of vitamin C used as a standard. Therefore, it was suggested that the anti-oxidative effect of horse placenta was similar to that of the standard. In addition, it was found that its anti-oxidative effect was the best at 200 ~ 300mg/ml of concentration.

2) Collagen synthesis test

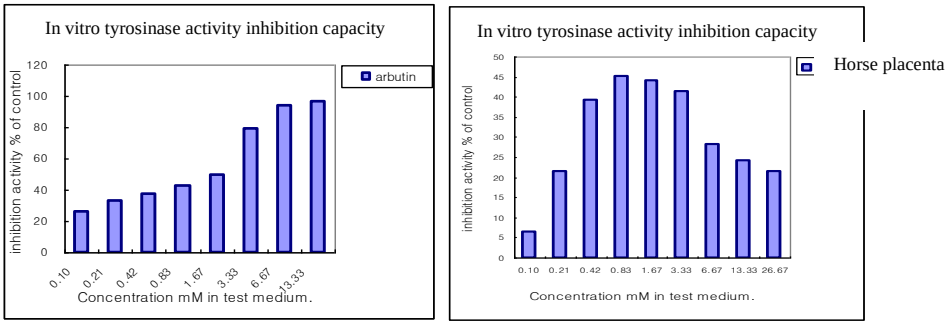


It was found that the placenta of Halla horse showed the highest collagen synthesis efficacy as much as 42% at $5*10^{-2}$ % (w/v) of concentration.

As it showed about 2 time higher collagen synthesis efficacy than retinol (24%), a traditional wrinkle improvement ingredient, it was considered as a new anti-aging ingredient that was excellent in wrinkle improvement and cell elasticity.

3) Whitening efficacy test

Result of In vitro tyrosinase inhibiting activity (Graph comparison)



Arbutin (Standard) – 200, 150, ···, 12.5, 6.25 mM Placenta – 400, 200, ···, 1.56 mM

Whitening effect test (tyrosinase activity inhibition capacity) with total 9 types of diversified sample concentration such as 400, 200, ···, 1.56 mM resulted that

- a graph similar to that of Arbutin used as a standard appeared.
- It was found that the whitening effect of horse placenta was somewhat lower

than that of arbutin used as a standard and had the best in vitro tyrosinase activity inhibition capacity at 0.83mM, about 45%.

- *In vivo* testing (laboratory, animal, and clinical test data) : simple clinical test was progressed

- Simple clinical test data: A simple clinical test is being progressed with cosmetic samples containing this horse placenta ingredient
  - Information of simple clinical test performing institute: Lycoris Co., Ltd.
  - Number of simple clinical test execution : 2 times
  - Simple clinical test design (Detailed information such as No. of subjects and test period):

    Against the sample formulation (placenta toner, placenta gel, and placenta cream, simple clinical monitoring was progressed.

    1) 1st sample (30 subjects, 2 weeks) – they answered that transparent formulation and contact feeling on the skin were good and it was also good that the skin tone was brightened.

    # Formulation upgrade progression for placenta cream

    2) 2nd sample (30 subjects, 2 weeks) – The subject used the placenta gel and upgraded placental cream sample. All the monitoring personnel satisfied the cream formulation and its feeling in use. They were also satisfied to the toner. There were a lot of questions on the product launching.
  - Respondent ratio (%) : 100%
  - Concentration and formulation of ingredient used in this test: concentration (non-disclosure item), formulation (toner, crystal gel, and cream)

- Publication in scientific journal (name of journal) :

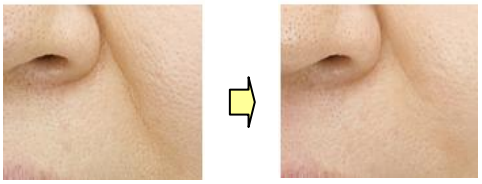
  An article on whitening effect of placenta - Mallick S et el., Pigment Cell Res. Feb 18(1), 25-33, 2005

- Recommended formulation: toner, crystal gel, cream (moisturized feeling

during being absorbed into skin, maintains the status of skin on the next day)

- Recommended concentration (mg per day) : 20-30mg/day
- Information on collaborating research institute, professor, or university: None
- Conclusion of the above simple clinical test:

  - From the simple clinical test, it was suggested that general customers had good recognition to the placenta, so there was no rejection feeling to it.
  - The whitening effect can be felt after 1-2 weeks and the wrinkle improvement effect is obtained after about 2-3 months.



(2009. 9. 20) (2009. 12. 19)

- The monitoring personnel were satisfied to clean and clear feature of the crystal gel and its feeling to penetrate into the skin.
- They answered that rapid launching of this product was required.

2. Information on intellectual property right and exclusive right

- Patent information
  - Provisional/Non-provisional/PCT
  - Describe unique features of the patent. (compare with competitors)

    Although placenta containing rich amino acids has a unique smell, Japan can not remove the smell of pig or horse placenta completely and Australia and Europe can not remove the smell completely also.

    Technology of Lycoris Co., Ltd. not only has a process to remove this smell of the placenta completely but also manufactures colorless and transparent extract. When applying finished cosmetic products made in Australia or Europe, there is some smell and a strong perfume is used for removing it. Because the raw material of our product itself is colorless and odorless, it is possible to treat it as no fragrance, so it is suitable to taste of modern people.

- Number of patent : 3

- Patent type :
  1. A method for manufacturing horse placenta extract and a food composite (Food & Extract method)
  2. Horse placenta wrinkle improvement composite (Cosmetics)

- Patent no./number of applicants/summary/right/date
  1. No. 10-0932183/3 applicants/common right of 3 parties/2009.12.8 (patent registration)

  It is related to a method for manufacturing horse placenta extract that reduces destruction of physiological active substance in horse placenta, increases content of effective substances, and has no color and no order and a composite able to use the same in food.

  2. No. 10-2010-0021376/4 applicants/common right of 3 parties/ 2010.3.10(patent registration)

  This patent is related to a wrinkle improvement cosmetic material composite containing horse placenta extract. More detail, it is related to a skin wrinkle improvement cosmetic material composite containing horse placenta extract that has excellent effects in anti-aging and wrinkle prevention in concurrence with superior in vivo safety.

  2. No. 10-1011772/ 2 appicants/common right of one party/: Jan. 24, 2011 (patent registration)

  Process for preparing horse placental extract by low temperature treatment, horse placental prepared therefrom, and food composition having the same.

- Describe exclusive right (MLM, all domestic markets, and global market, etc.)