Composition for inhibiting cellular senescence comprising extracts of Melandrium firmum Rohrbach or bornesitol isolated from the same

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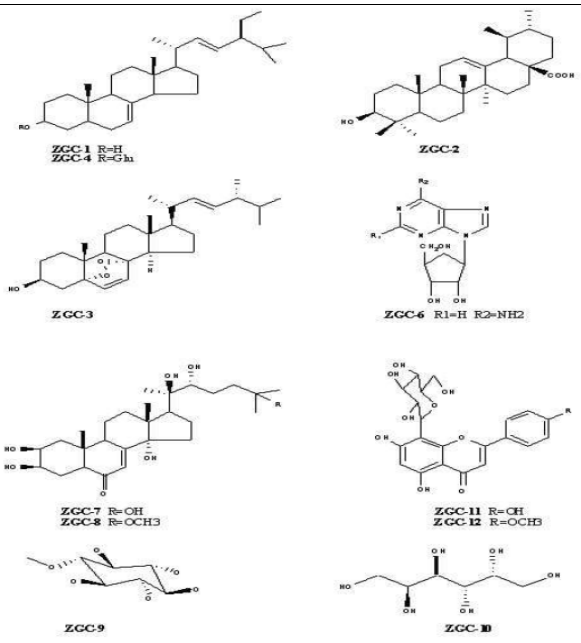
Industry Sector	Biotechnology, Non-profit org/Gov't, Pharmaceutical Research tools, Service
Therapeutic Area	Oncology, Dermatological, Hospital and Surery, Immune related disorders, Infectious diseases, Metabolism, Oral Health
Stage of Development	Registered

1. Summary

- The new technology is a pharmaceutical composition. Extraction or Bornesitol separated from Melandrium Firmum is inhibited cellular senescence by Adriamycin.
- In addition, it also helps resist the replication aging of cell division.
- This invention can be used for development of anti-aging functional foods and cosmetics with treatment for effective anti-aging related illnesses.



<Chemical structure of a single component separated from Melandrum>

2. Applications

- This invention can be used for the treatment of anti-aging. A few examples of these can be:

  Natural cosmetics
  Health supplements
  Natural medicines
  Natural anti-cancer injections

- Specialized formulation can be applied for companies like:

  Pharmaceuticals
  Health supplement Company
  Cosmetics manufacturers

- Technical needs for inhibiting cellular senescence can be met with:

  Anti-aging medicines, cosmetics, health supplement and medical needs etc.

▲ 천연물 화장품 (비엔씨바이오팜)

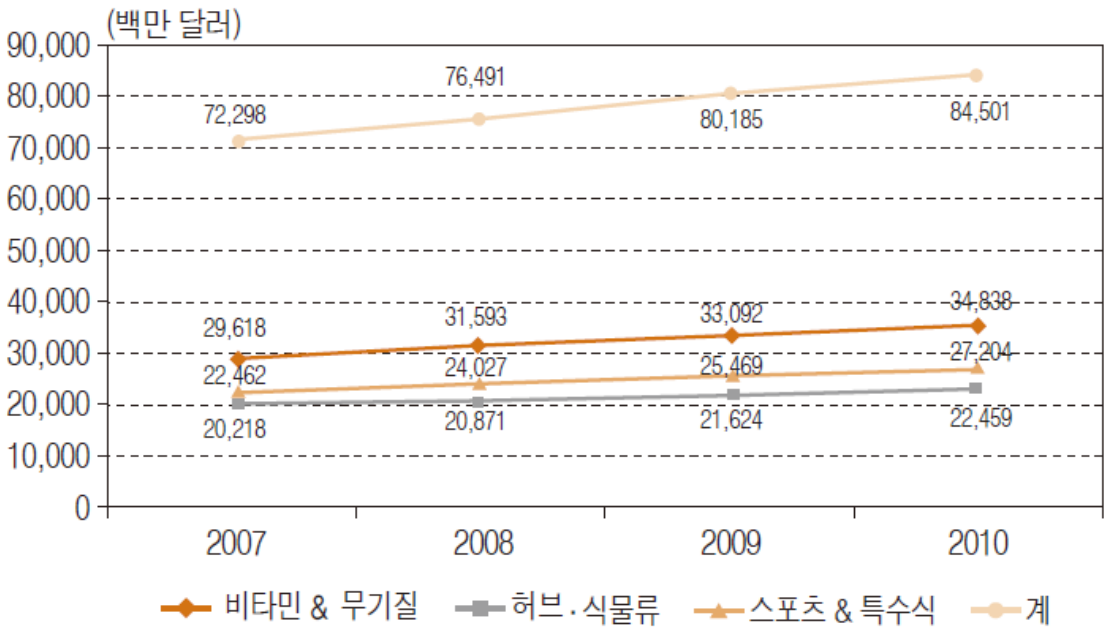
▲ 천연물 건강기능식품(BF-7 천연물 함유 건강기능식품)

▲ 천연물 의약품

▲ 천연물 항암치료 주사제(삼육서울병원)

3. Market Feasibility

- Rapid growth of aging society is a very serious issue.
- This leads to anti-aging industry's market expand as well.
- Annual growth rate is 9.5% in Korea and anti-aging medical field's growth rate is at 12.4%.
- Growth for interest in anti-aging worldwide.
- Internationally, the percentage for people who are older than 65 yrs will be from 6.9% in 2009 to 23.1% by 2030.
- In 2015, global market size in this industry is about 300bil USD and with 8.92% growth rate.
- Also, health supplement market is growing at 5.3%



4. Type of Business Relationship Sought (include licensing availability)

- Co R&D Partner
- Licensing
- Technology Transfer
- Technology Commercialization
- Venture / Investment / Fund
- Market Validation / Assessment

5. Technical Advantages

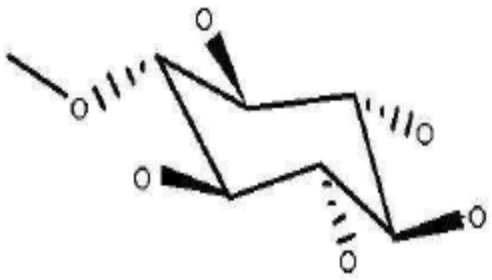
- Technical Benefit: The senescence suppression element/material can be extracted from Melandrium. Extraction or Bornesitol separated from Melandrium Firmum is inhibited cellular senescence by Adriamycin. Also, it helps resist the replication aging of cell division. Finally, Melandrium's ethyl acetate extract has inhibitory efficacy for human vascular endothelial cells, and Melandrium's hexane extract, ZGC-2 (ursolic acid), ZGC-9 ((-)-bornesitol) has inhibitory efficacy for human fibroblasts.

- Economic Benefit: Development of anti-aging product with Melandrium extract can improve economic value. This development can be used as a treatment for skin aging, rheumatoid arthritis, osteoarthritis, hepatitis, skin tissues, arteriosclerosis, prostatic and etc. Also can be developed for cellular senescence of the fibroblast food and vascular aging drug. Finally, economic value of Melandrium can be increased by using it as a natural ingredient in manufacturing anti-aging drugs.

6. Technical Highlighted Summary

- Anti-aging research has been always high in terms of well-being and increase in longevity.
- Natural materials or ingredients like Melandrium can relatively safe for long-term treatment, compare to complex chemical compositions.
- Natural materials are increasingly used for anti-aging industry as well.
- Compare to the other natural elements such as Syriacusins, Slytocybin, Cyathusals and etc., effectiveness of Melandrium is far higher. .

7. Mechanism (MOA)



<Chemical formula for (-)-bornesitol, which is contained as active ingredient for inhibiting cellular senescence from Melandrium extract>

8. Patent Information and Status

- Patent for “Peptide with antifungal activity purified from Lactobacillus plantarum YML007” was filed in 08. 27. 2013, application number 10-2013-0101709 in South Korea.
- Same patent is filed for International(EU) market in 08. 27. 2013, application number PCT/KR2014/008944.

9. Patent Number(s)

Title	Country	Patent Application No.	Original Assignee	Filing Date	Inventors
Composition for inhibiting cellular senescence comprising extracts of Melandrium firmum Rohrbach or bornesitol isolated from the same	S. Korea	10-2013-0101709	Industry-Academic Cooperation Foundation, Yeongnam University	08. 27. 2013	KIM, Jae-Ryong; SON, Jong-Keun
Composition for inhibiting cellular senescence comprising extracts of Melandrium firmum Rohrbach or bornesitol isolated from the same	International(EU)	PCT/KR2014/008944	Industry-Academic Cooperation Foundation, Yeongnam University	08. 27. 2013	KIM, Jae-Ryong; SON, Jong-Keun

10. Key Words

Cellular senescence, Melandrium, Firmum, bornesitol, anti-aging, skin aging, rheumatoid arthritis, osteoarthritis, hepatitis, chronic damage to the skin tissues, arteriosclerosis, prostatic, hyperplasia, liver cancer, aging cell, endothelial cell

11. Company Description

Technology Transfer Commercialization Center in Yeungnam University is in charge of University research achievements' tech transfer and intellectual property issues including: application, registration, acquisition, management and etc. Recently, university has obtained multiple superior research achievements in biomedical sectors of medicine, pharmacy and medical appliances. TTC Center has been working together to share this great opportunity in terms of tech commercialization. Overall, TTC Center is transferring more than twenty tech projects annually to companies to help them be successful in commercialization. Center also helps to bring cooperation between industry and academy to develop national economy and create more job opportunities.