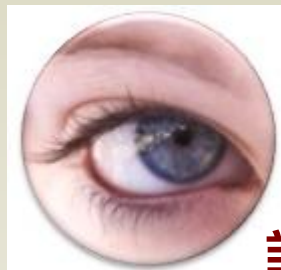


杞子如何延緩 認知障礙症及青光眼

抗衰老



護眼

氨基酸、維生素



護腦

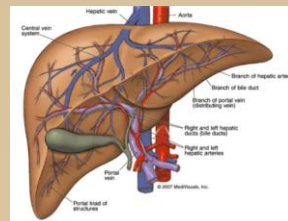
杞子多醣

胡蘿蔔素、甜菜鹼、
玉米黃素

調節免疫功能

Raymond Chuen-Chung CHANG, PhD
鄭傳忠副教授

香港大學李嘉誠醫學院解剖學系神經退化病實驗室
香港大學認知障礙症研究網絡
香港大學腦與認知科學國家重點實驗室



護肝

Normal Aging vs Pathological Aging

生理性的衰老和病理性的衰老

正常衰老



正常老化
過程

認知功能逐
漸改變

不基於病變
因素

病理型衰老



認知障礙
症

因其他疾病
因致

抗衰老/ 延緩衰老的含意？

- 衰老可分為正常和病理兩種。前者是一個自然的成熟過程，後者總是與疾病相關
- 健康老齡化** (Healthy aging)
 - 目標是發展和維持長者的最佳機體功能，心理、社會和物質福祉
 - 其中一項體現於防止、延遲或盡量減少疾病的發生



腦退化

冠心病

高血壓、高血脂、糖尿病

青光眼、白內障

抑鬱症

透過預防或治療某些老年病，而令壽命延長，或改善長者的生活質素(Quality of life)

→ 延年益壽

枸杞子

- 本品為茄科植物寧夏枸杞 *Lycium barbarum* L. 或枸杞 *L. chinense* Mill. 的果實
- 多產於寧夏、甘肅等地
- 【性味功效】
 - 味甘, 性平, 入肝、腎、肺經
 - 補腎益精, 養肝明目, 潤肺止咳
 - 用於肝腎陰虛, 頭暈目眩, 腰膝酸軟, 虛勞咳嗽, 消渴, 視力減退等











枸杞子的化學成份

- 蛋白質,脂肪,杞子多糖
- 胡蘿蔔素,硫胺素,核黃素,甜菜鹼, 玉米黃素
- 豐富的鉀、鈉、鈣、鎂、鐵、銅、錳、鋅等元素
- 22種氨基酸和多種維生素

胡蘿蔔素 (β -carotene)



19.6 mg/100 g

>



5.6 mg/ 100 g



- 製造維生素 A, 提供強大的抗氧化作用

甜菜鹼 Betaine

- 杞子含有0.7-1.2%甜菜鹼
- 幫助維持心血管健康
- + 葉酸 (folic acid), 維他命 B6, B12 → 分解高半胱氨酸, 這種物質能夠增加動脈粥樣硬化的風險

玉米黃素 Zeaxanthin

- 含氧類胡蘿蔔素
- 可見於眼的黃斑部位
- 有助預防老年性白內障和黃斑點退化
- 枸杞的玉米黃質易被人體吸收, 可以直接增加血漿中玉米黃質的濃度



30 mg/100 g

>



210 µg/ yolk

枸杞子的藥理作用

- 對免疫功能的影響 (免疫調節作用, 免疫增強作用)
- 延緩衰老作用 (anti-aging)
- 抗腫瘤作用
- 降血脂與保肺、抗脂肪肝作用
- 降血糖作用
- 對造血系統的影響
- 抗遺傳損傷

ORIGINAL ARTICLE

Goji Berry Effects on Macular Characteristics and Plasma Antioxidant Levels

Peter Bucheli*, Karine Vidal*, Lisong Shen[†], Zhencheng Gu*, Charlie Zhang[‡], Larry E. Miller*,
and Junkuan Wang*

- 健康成年人, 65-70歲
- 枸杞子13.7g/日, 90日
- 隨機, 雙盲, 安慰劑對照的臨床研究
- 安慰劑組: 黃斑色素減退和軟玻璃膜疣的積累
- 杞子組: 保持穩定
- 玉米黃質血漿水平和抗氧化能力分別上升26%和57%

Immunomodulatory Effects of a Standardized *Lycium barbarum* Fruit Juice in Chinese Older Healthy Human Subjects

Harunobu Amagase,¹ Bixuang Sun,² and Dwight M. Nance³

¹FreeLife International LLC, Phoenix, Arizona; ²Department of Nutrition, University of California at Davis, Davis, California;
and ³Susan Samueli Center for Integrative Medicine, University of California at Irvine, Orange, California, USA



Available online at www.sciencedirect.com



Nutrition Research 29 (2009) 19–25

*Nutrition
Research*

www.nrjournal.com

Lycium barbarum (goji) juice improves in vivo antioxidant biomarkers in serum of healthy adults

Harunobu Amagase^a, Buxiang Sun^b, Carmia Borek^{c,*}

^aFreeLife International, LLC, Phoenix, AZ 85040, USA

^bDepartment of Nutrition, University of California at Davis, Davis, CA 95616, USA

^cDepartment of Public Health and Family Medicine, Nutrition Infectious Disease Unit, Tufts University School of Medicine, Boston, MA 02111, USA

Received 2 September 2008; revised 22 November 2008; accepted 25 November 2008

- 健康成年人, 平均60歲(55-72歲)
- 枸杞果汁, 30日
- 隨機, 雙盲, 安慰劑對照的臨床研究

- 枸杞子調節免疫反應
- 改善整體狀況, 如疲勞和睡眠質素
- 改善抗氧化能力
- 無明顯副作用

- 糖尿病、高血脂家兔模型
- 口服杞子提取物
- 顯著降低血糖水平，血清總膽固醇和甘油三酯濃度
- 顯著增加高密度脂蛋白膽固醇水平



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Life Sciences 76 (2004) 137–149

Life Sciences

www.elsevier.com/locate/lifescie

Hypoglycemic and hypolipidemic effects and antioxidant activity
of fruit extracts from *Lycium barbarum*

Qiong Luo^a, Yizhong Cai^b, Jun Yan^a, Mei Sun^c, Harold Corke^{b,*}

延緩衰老作用？

傳統中醫理論



滋補
陰陽平衡
整體觀



現代科學研究



認知障礙症

- ◆ 阿爾茲海默氏症
(Alzheimer's Disease)
- ◆ 血管性認知障礙症
(Vascular dementia)

認知障礙症(阿爾茲海默氏症)的病徵

1. 失去短期記憶, 影響工作能力
2. 執行熟悉的工作亦感到困難
3. 語言表達或理解有困難
4. 對時間及方位感到混亂
5. 判斷力減退
6. 思考／計算方面有困難
7. 隨處亂放東西
8. 情緒／行為變得變幻無常
9. 性格轉變
10. 失去做事的主動性



認知障礙症(阿爾茲海默氏症)的成因

A. 謎

B. 與遺傳基因可能有關:

1. 早老素基因1&2 (Presenilin 1 & 2)
2. 載脂蛋白 E4 (Apolipoprotein E4)

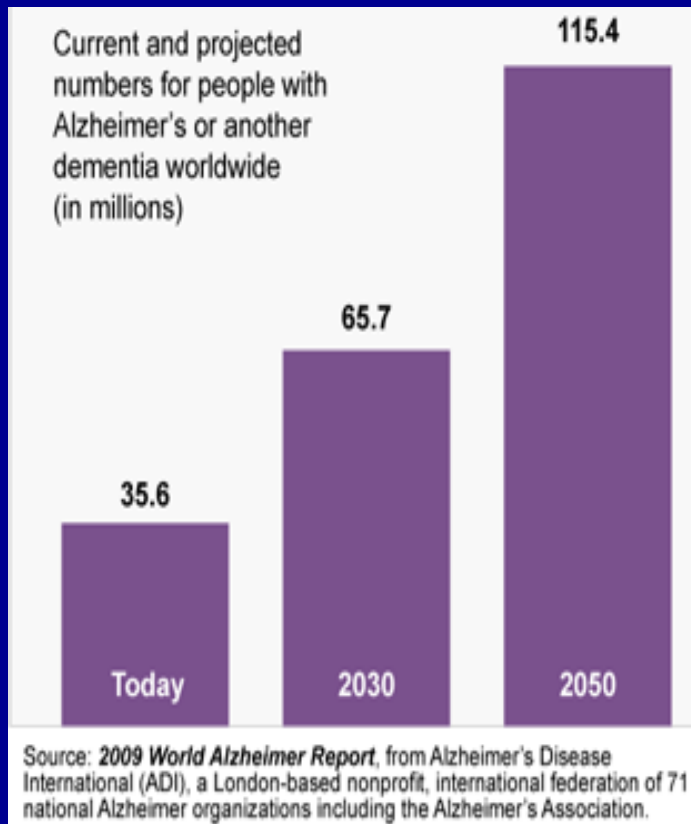
C. 與疾病可能有關:

1. 腦受傷如中風或腦創傷後所引致的病變
2. 糖尿病

D. 與環境因素可能有關:

1. 鋁/銅中毒, 環境污染, 病毒感染

認知障礙症：一個迫切的社會問題

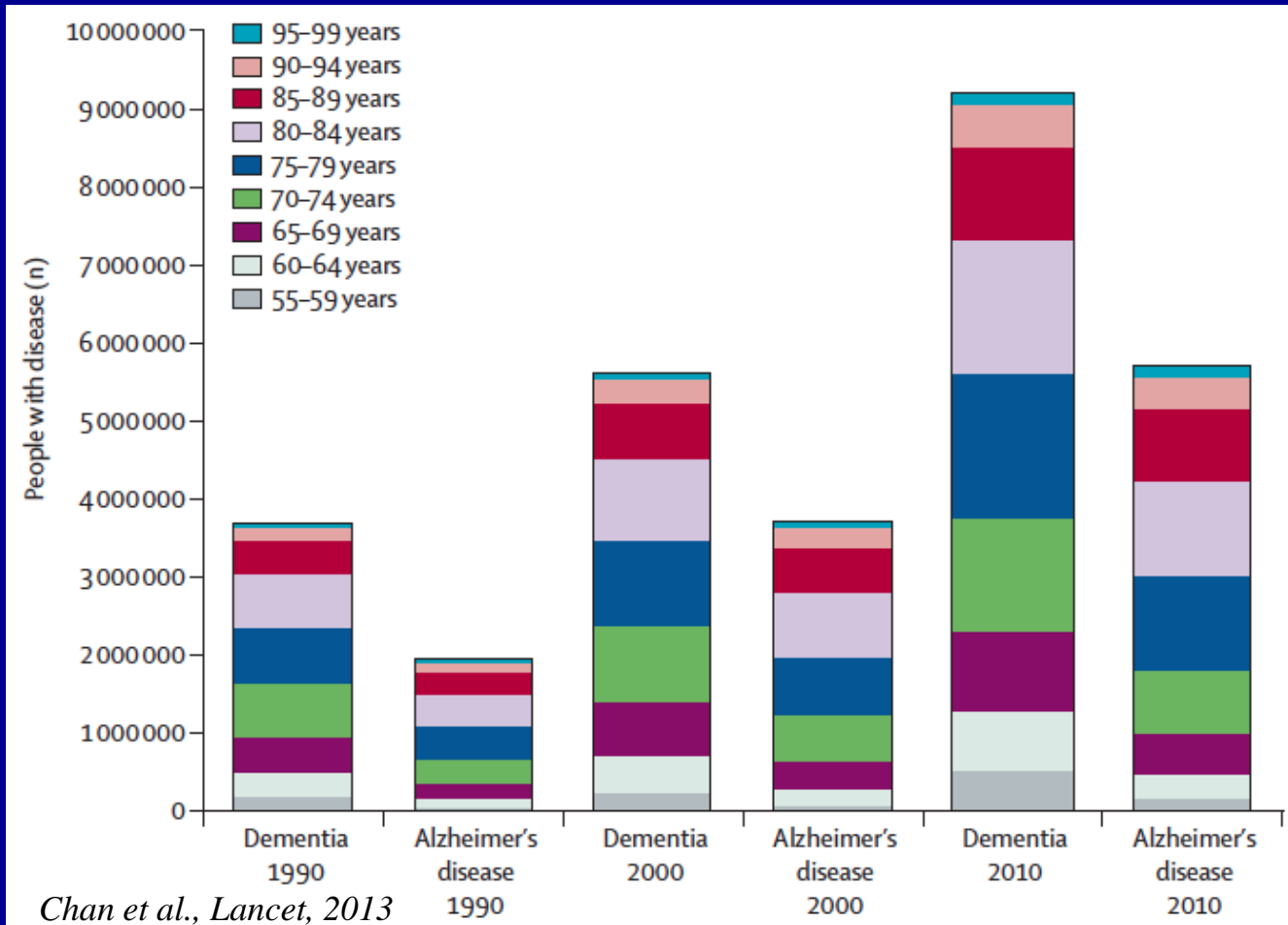


每年約有36萬個新症診斷為認知障礙症的個案，約有19萬人死於本病。

預計在2050年，全世界將有1億1千5百萬名認知障礙症患者。

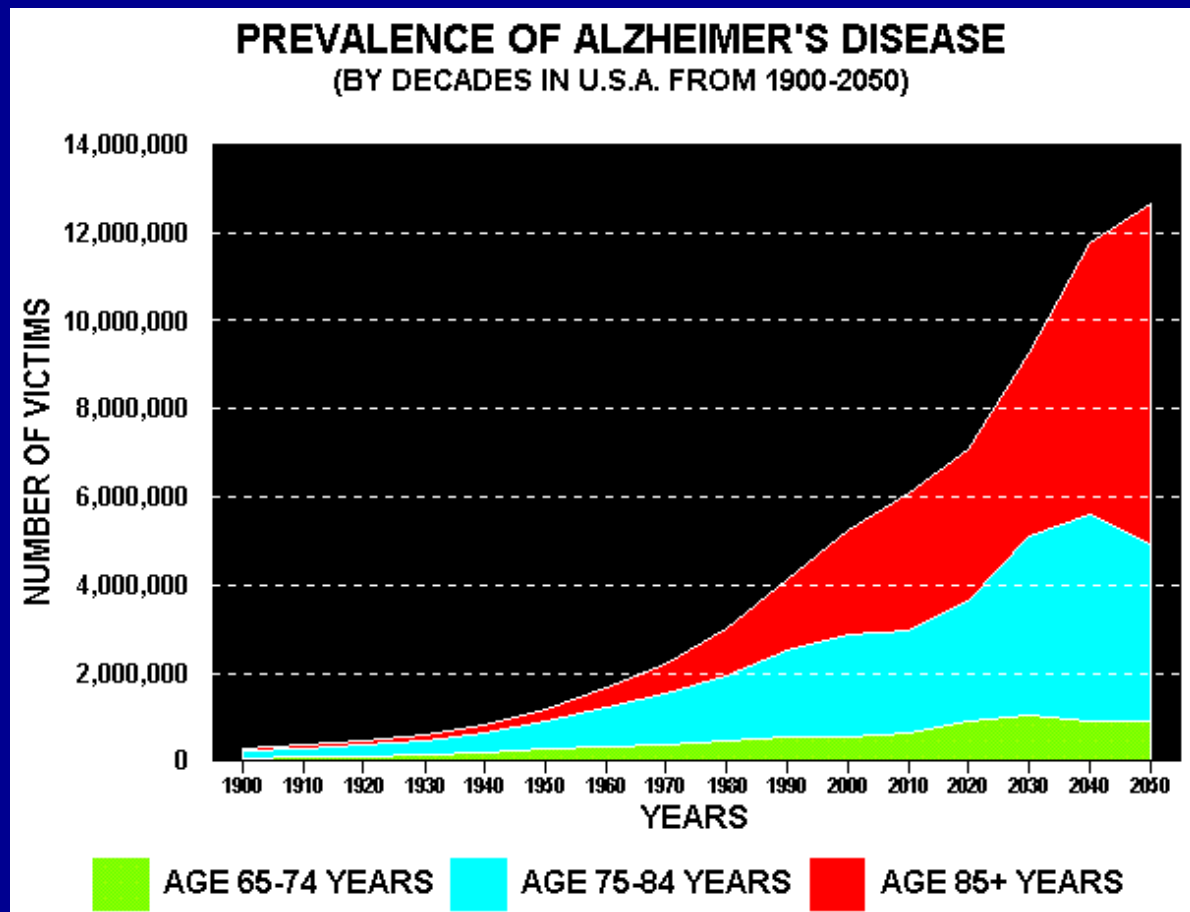
十五年後，每四個香港人中，就有一個達60歲以上。現時70歲以上的人口用有6%的人患有認知障礙症。

中國社會認知障礙症問題的嚴重性



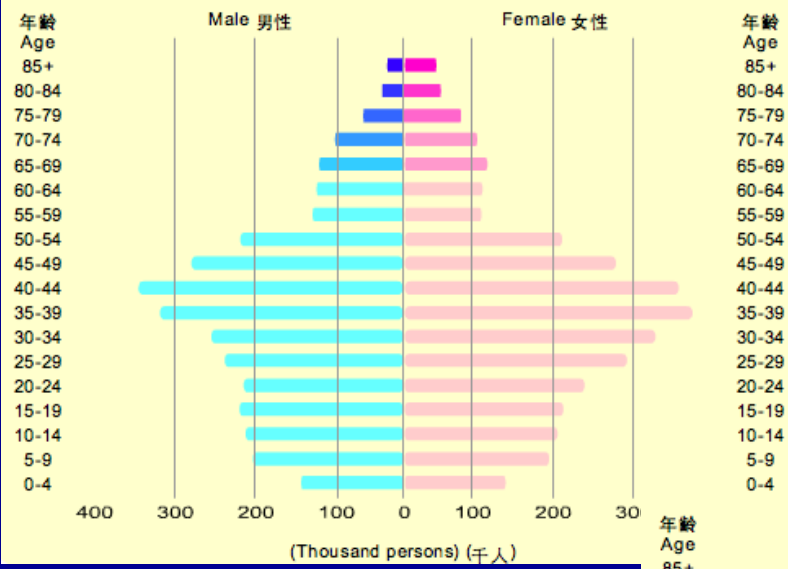
Chan et al., Lancet, 2013

認知障礙症(阿爾茲海默氏症)的病患率



Source: Alzheimer Association 美國認知障礙症協會

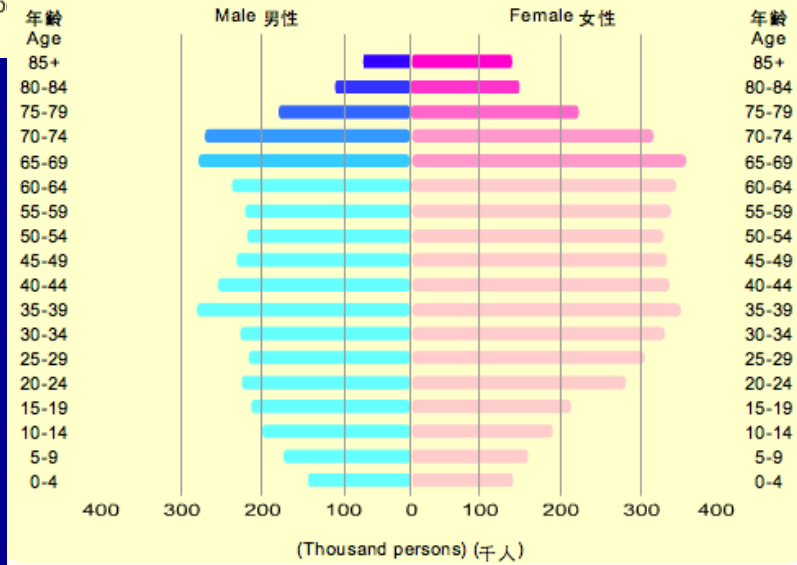
香港人口年齡分佈圖

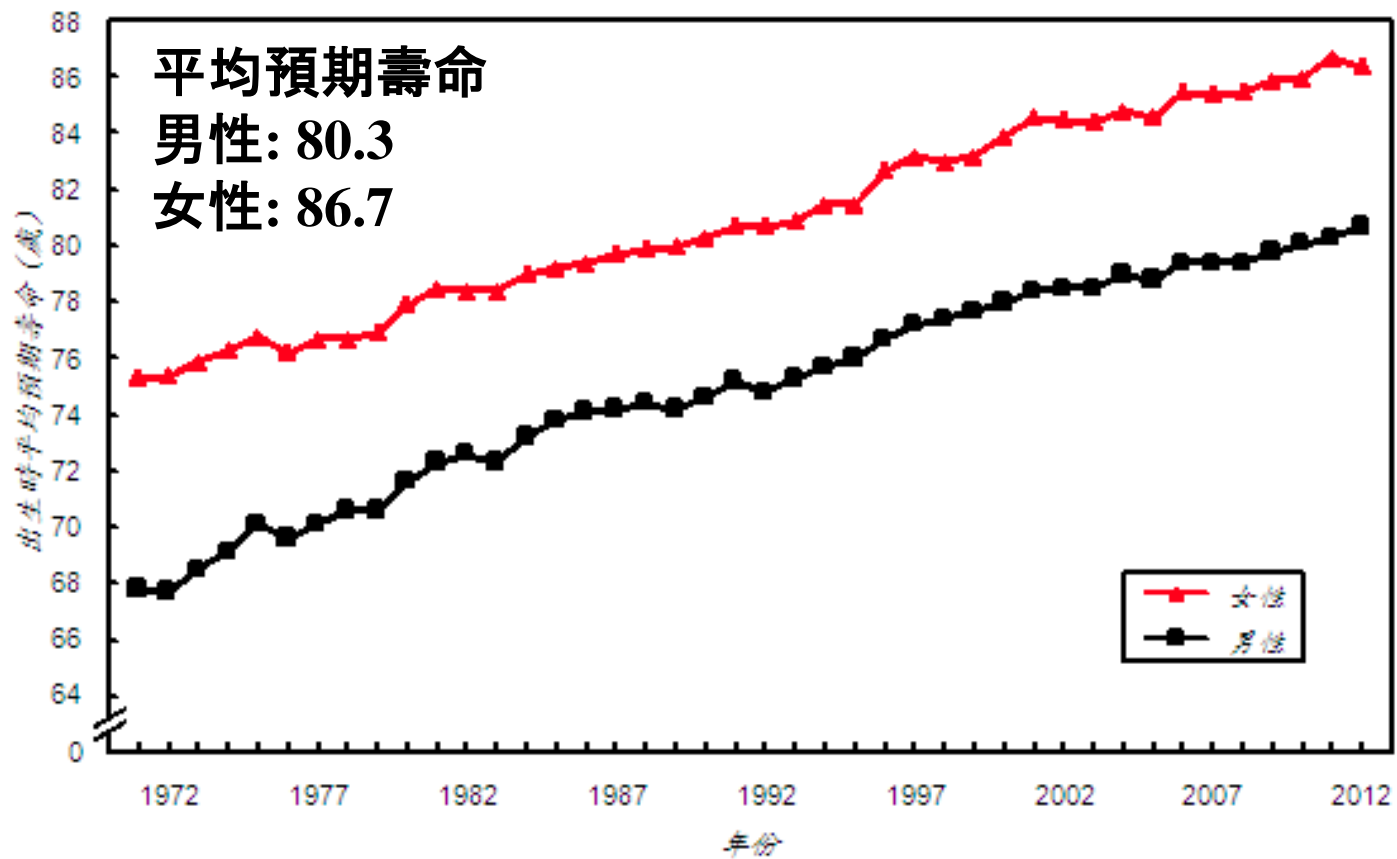


2001

資料來源:衛生署

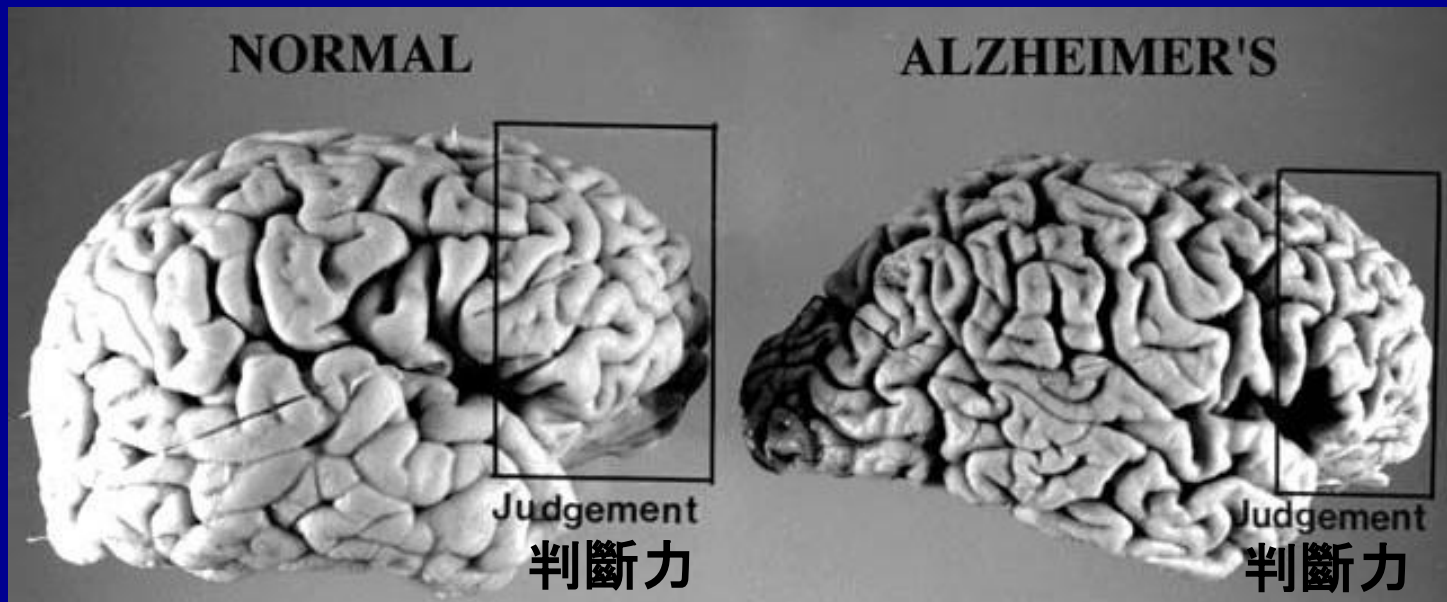
2031





資料來源:衛生署

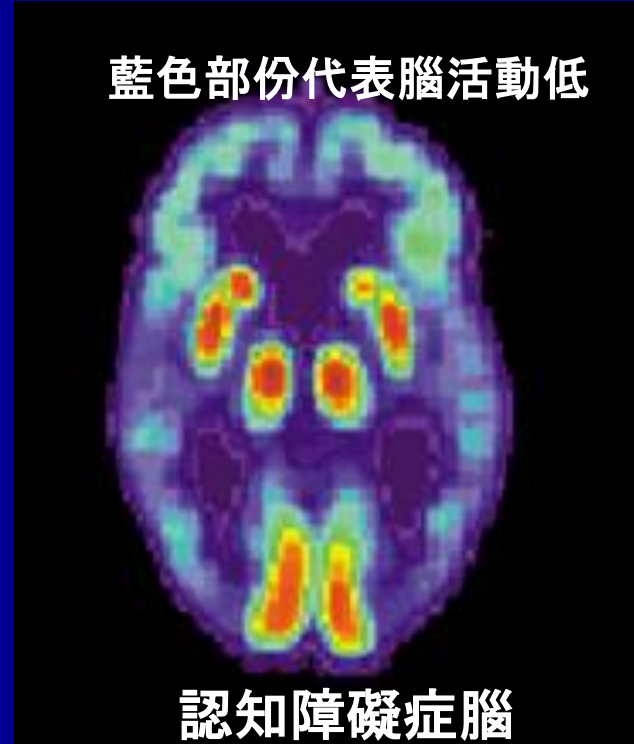
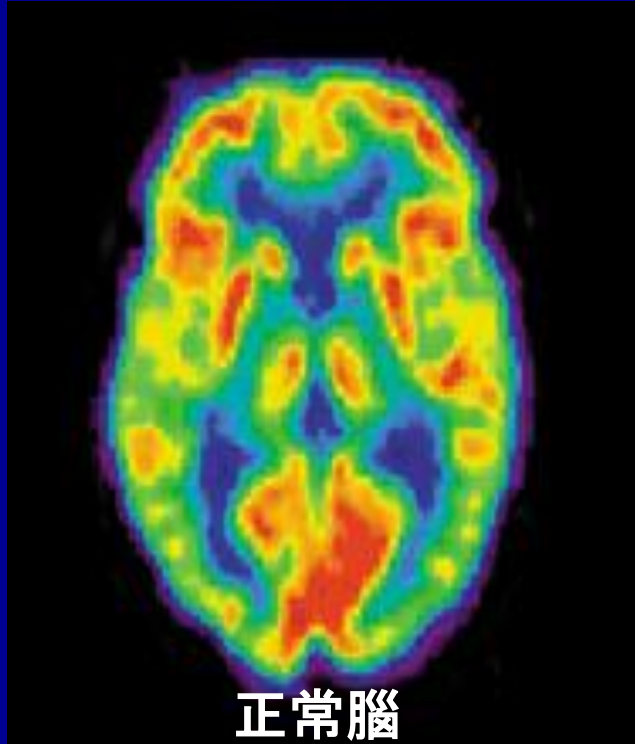
正常及認知障礙症病人腦的比較



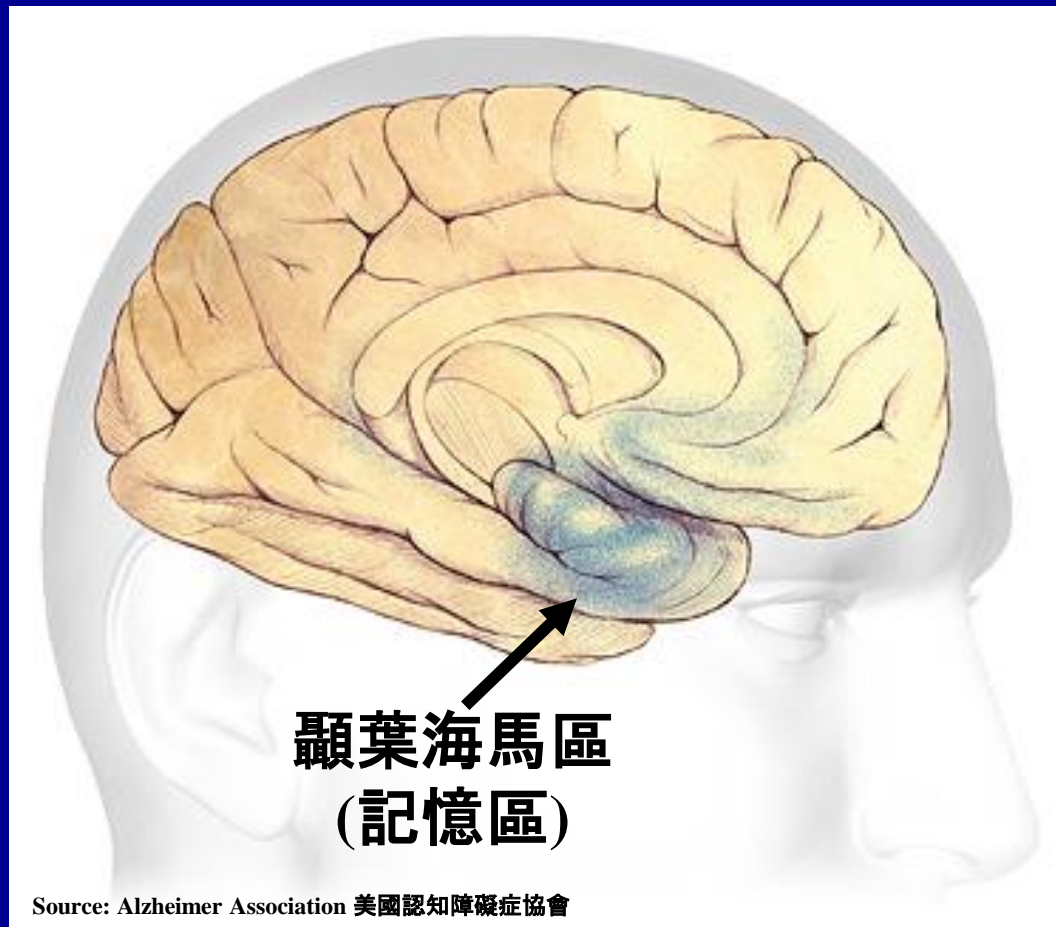
正常腦

認知障礙症
病人的腦

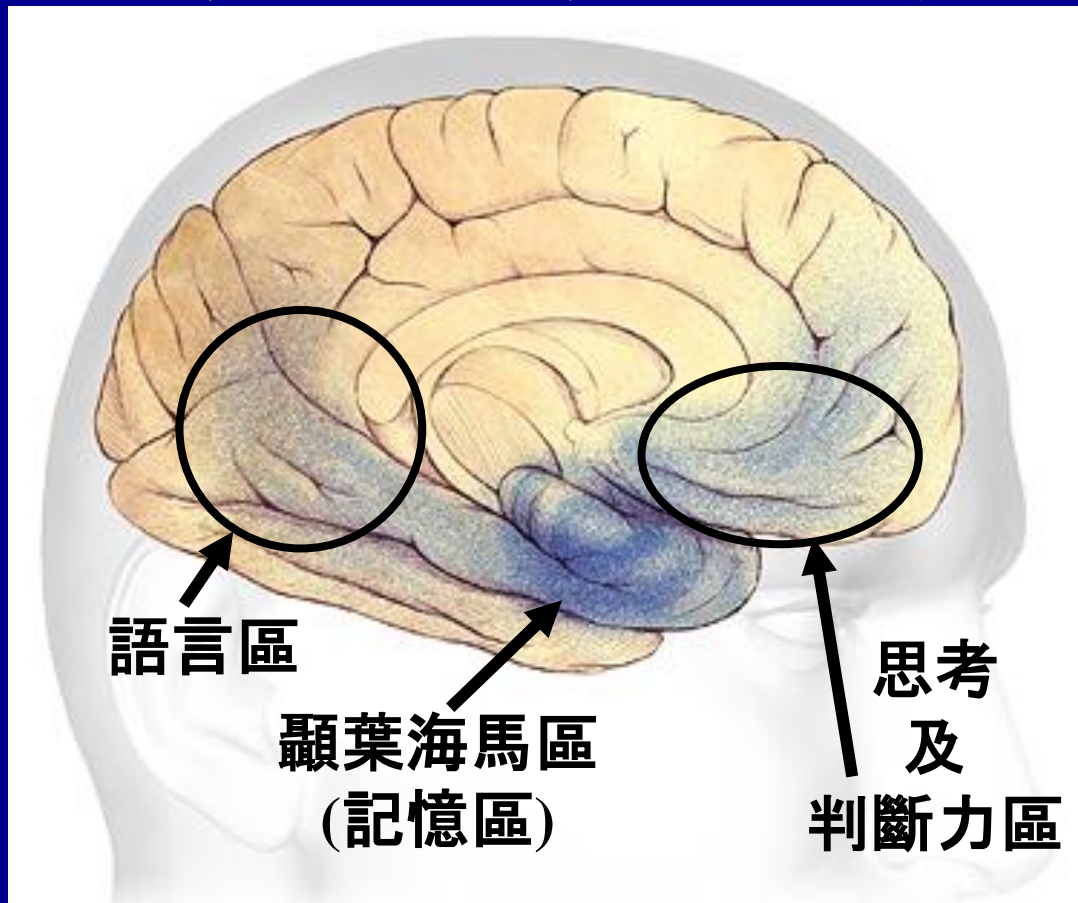
正子造影斷層掃描 (PET scan) 顯示 認知障礙症中腦代謝降低



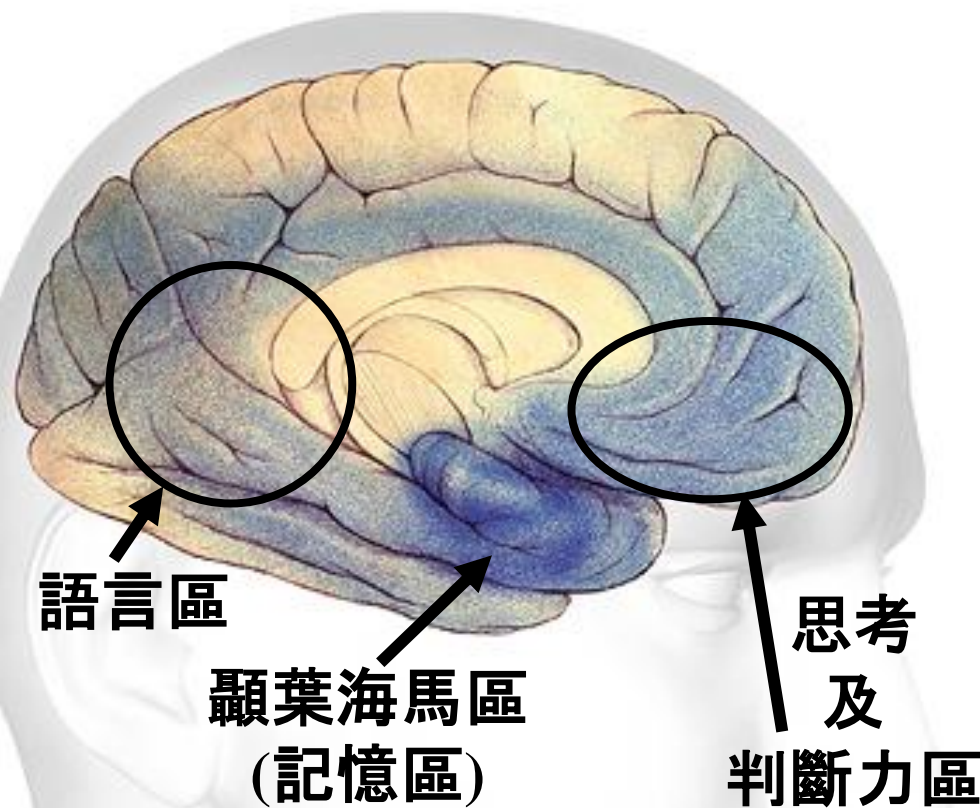
早期認知障礙症的特徵



中期認知障礙症的特徵



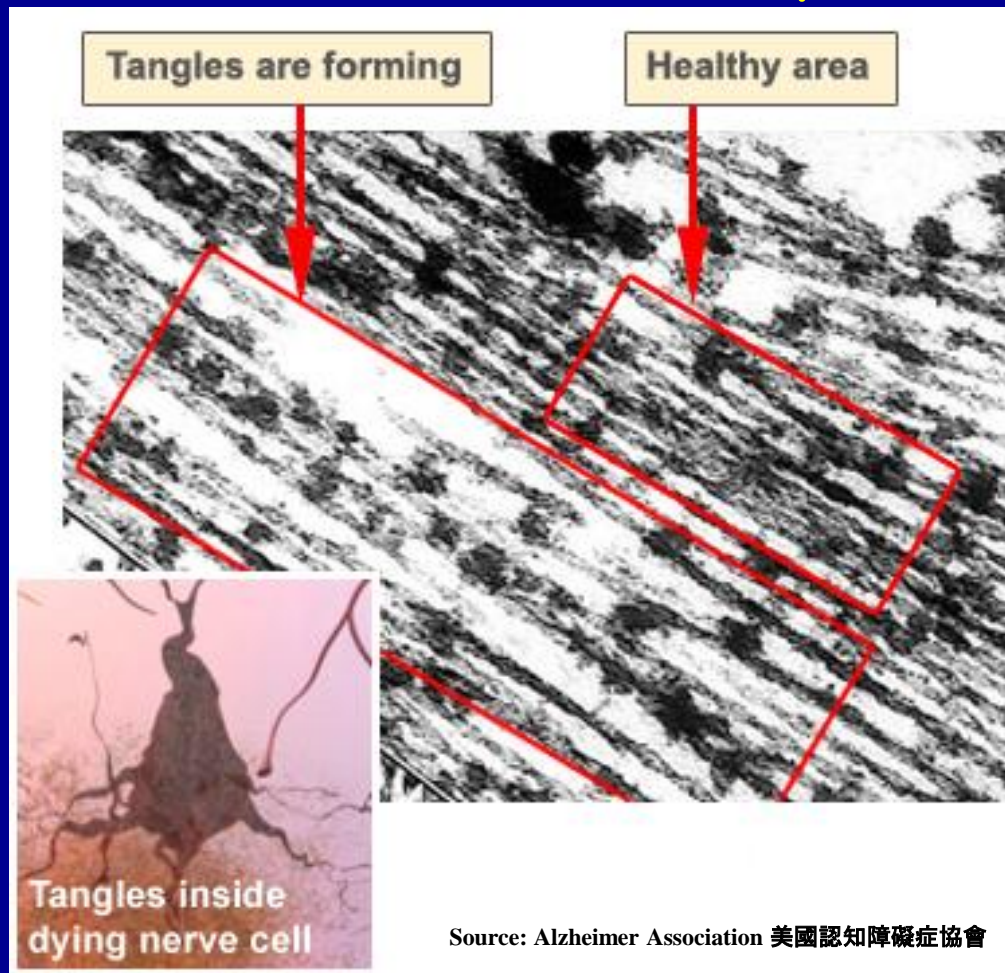
晚期認知障礙症的特徵



認知障礙症中神經斑的形成



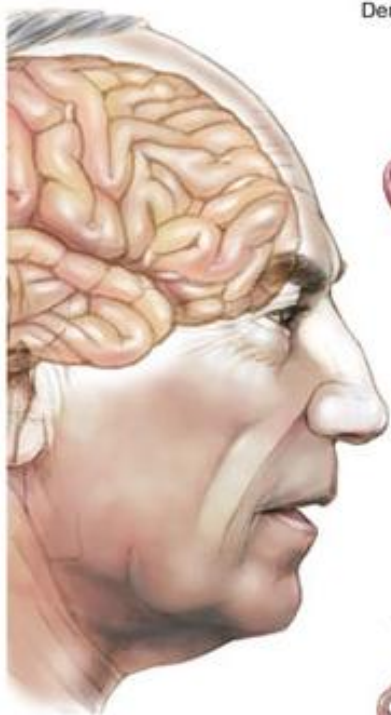
電子顯微鏡下神經纖維纏結



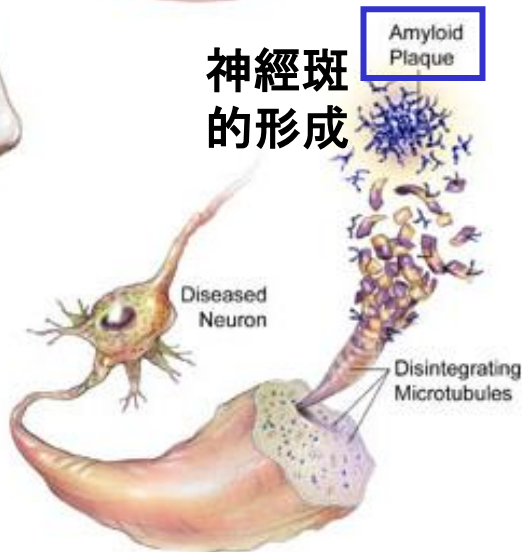
Source: Alzheimer Association 美國認知障礙症協會

Development of Alzheimer's Disease

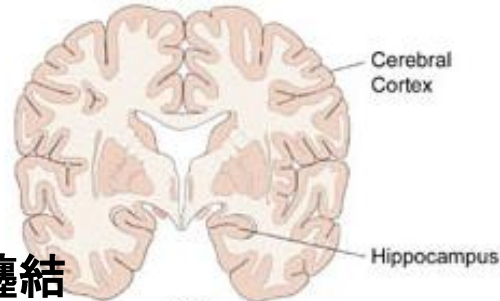
認知障礙症的形成



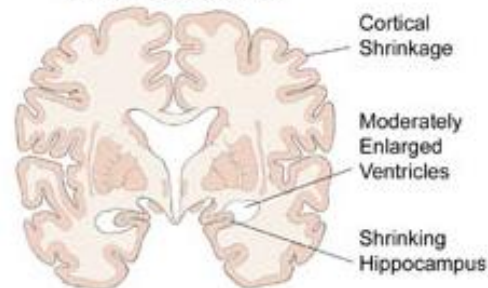
神經斑的形成



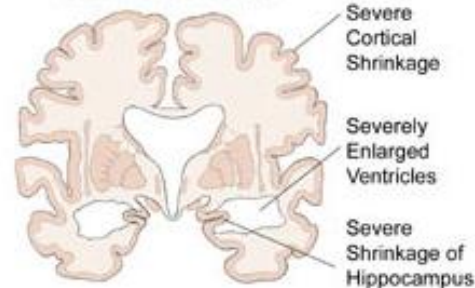
Healthy Brain



Mild Alzheimer's Disease



Severe Alzheimer's Disease

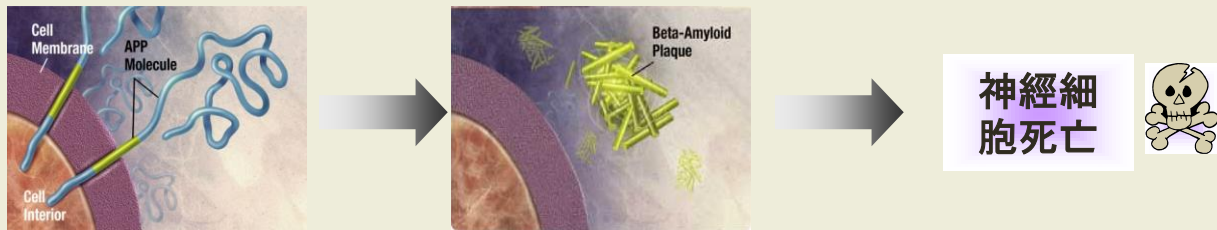


枸杞子的神經保護作用

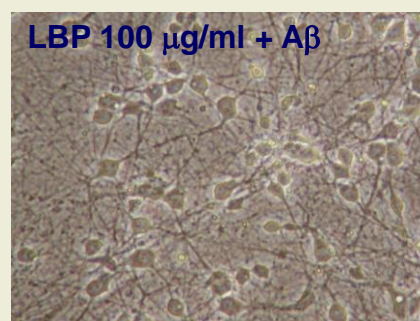
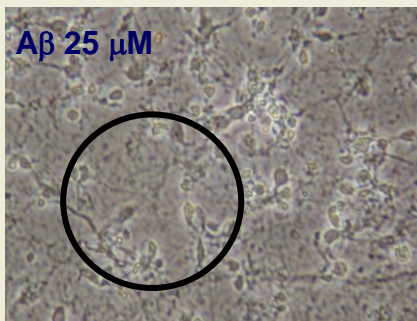
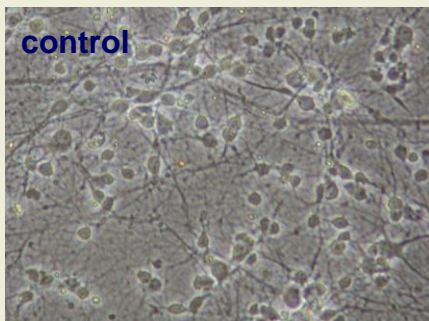
1. 減低乙型澱粉樣蛋白(beta-amyloid peptide)的毒性
2. 減低谷氨酸(glutamate)的毒性
3. 減低同型半胱氨酸(homocysteine)的毒性



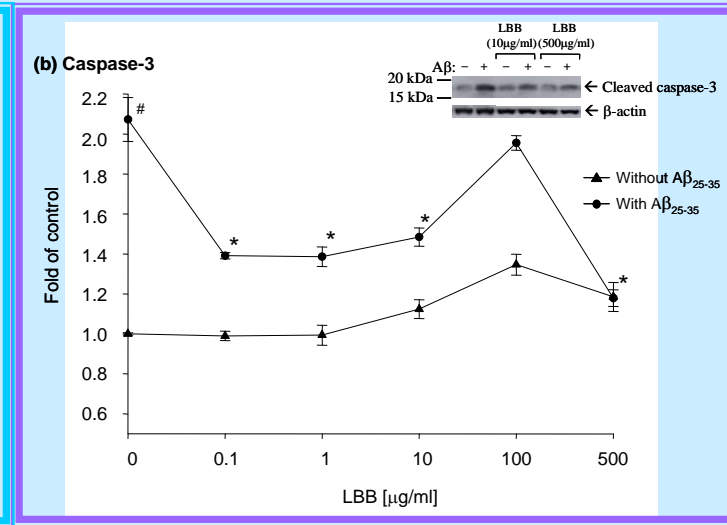
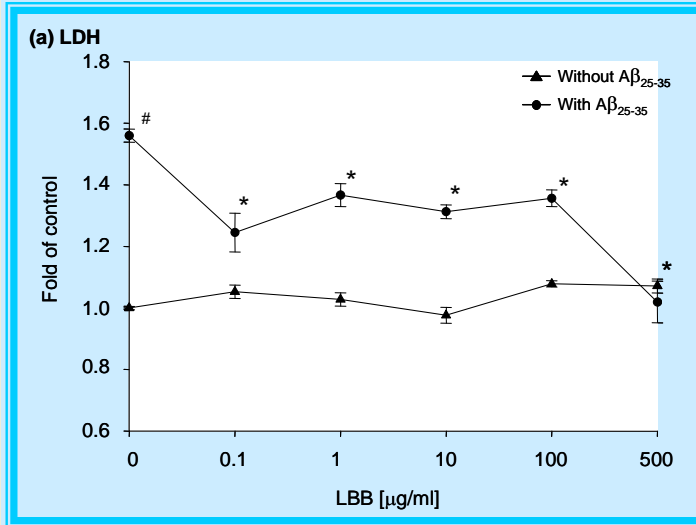
杞子多糖減低乙型澱粉樣蛋白(A β -peptide) 的毒性



- 杞子多糖能保持細胞形態



杞子多糖能減低乙型澱粉樣蛋白引起的LDH 和 Caspase-3 水平上升

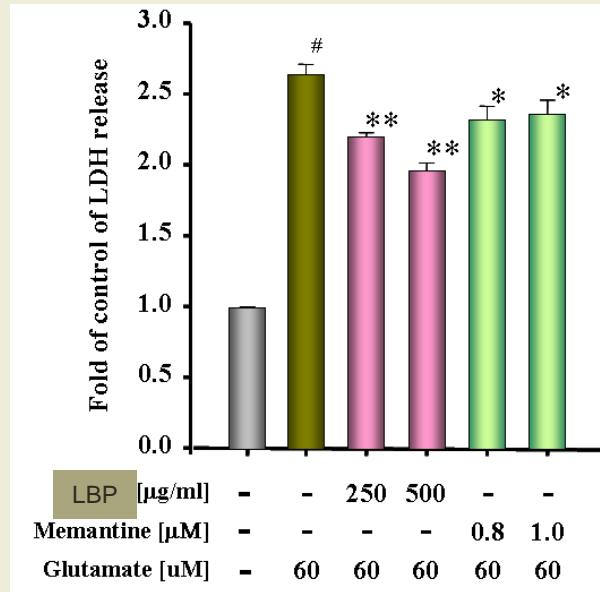


(Ho et al., 2007, *Brain Res.* 1158, 123-134)
 (Yu et al., 2007, *Intl. J. Mol. Med.*, 20, 261-268)
 (Yu et al., 2005, *Exp. Gerontol.*, 40, 716-724)

杞子多糖減低谷氨酸的興奮性神經損傷

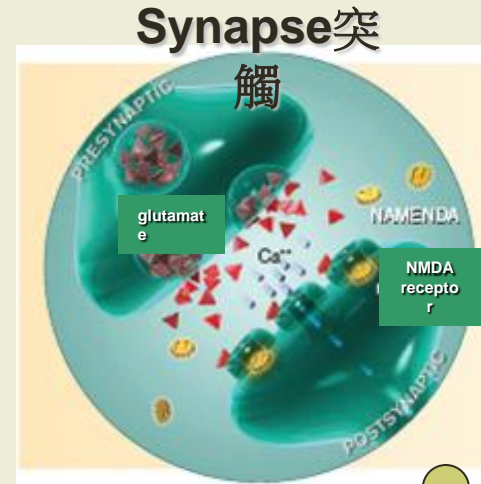
Glutamate Excitotoxicity

- 谷氨酸：腦中主要的興奮性神經傳導物質。過多會引起神經元損傷



LBP對谷氨酸的神經保護作用相當於memantine

Ho et al., Cell. Mol. Neurobiol., 2010

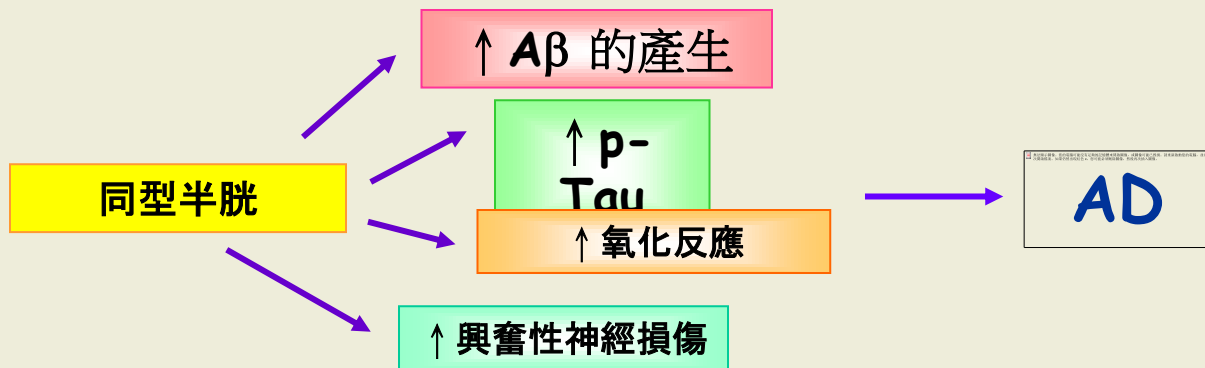


Memantine

- 美國國家食品藥物檢驗局核准治療藥物
- 非選擇性NMDA受體拮抗劑

杞子多糖減低同型半胱氨酸 (homocysteine) 引起的神經損傷

- 同型半胱氨酸是一種氨基酸
- 某些遺傳因素/營養素的失調 → 體內同型半胱氨酸濃度過高
→ 心臟血管方面的疾病, 阿爾茲海默症↑



認知障礙症中對眼的影響

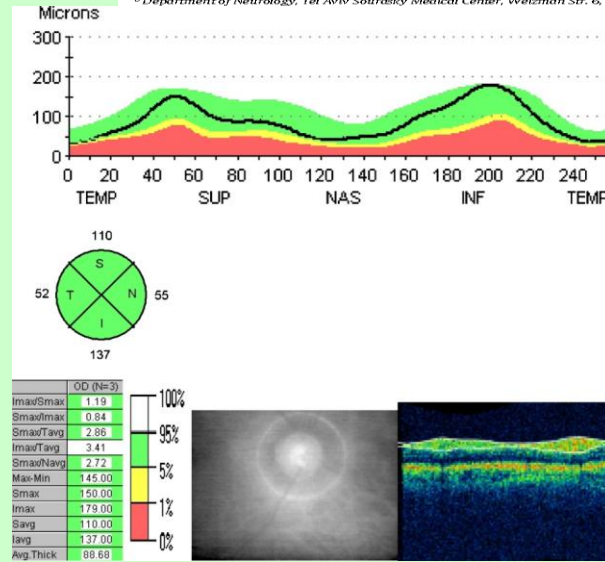
Retinal thickness in patients with mild cognitive impairment and Alzheimer's disease

Anat Kesler^{a,1}, Veronika Vakhapova^{b,*}, Amos D. Korczyn^{c,2}, Elvira Naftaliev^{a,3}, Meira Neudorfer^{a,4}

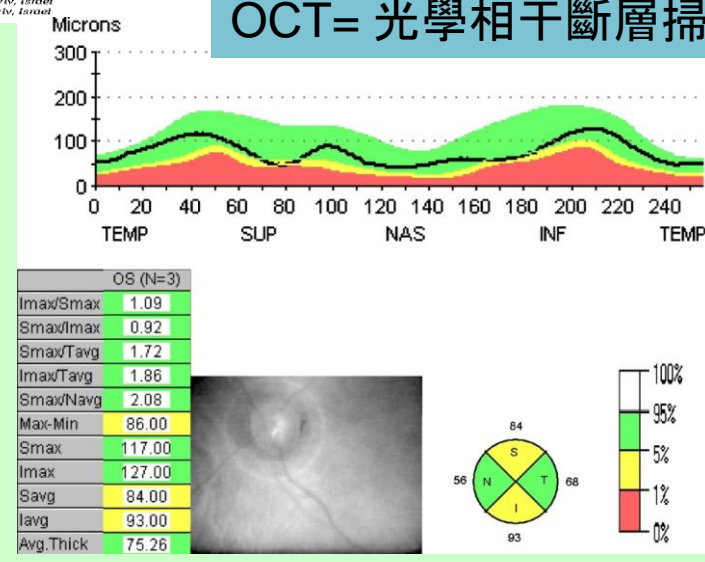
^a Neuro-ophthalmology Unit, Department of Ophthalmology, Tel Aviv Sourasky Medical Center, Weizman Str. 6, Tel Aviv 61000, Israel

^b Department of Neurology, Tel Aviv Sourasky Medical Center, Weizman Str. 6, Tel Aviv, Israel

OCT = 光學相干斷層掃描



RNFL imaging in control. *Optical coherence tomography data from a normal control.* All four quadrants are in the green zone (normal, 95–100 percentile). Overall RNFL thickness is shown in the last line of the boxed data with the right eye having an average RNFL of 88.68 μm (normal).



RNFL imaging in patient. *Optical coherence tomography data from a patient with AD.* Circle with four quadrants next to optic disc picture of left eye (OS) shows two quadrants (superior [S] and inferior [I]) with retinal nerve fiber layer (RNFL) thicknesses within the 1–5 percentile for age (yellow) but the nasal and temporal quadrants are normal for age (green). Overall RNFL thickness is shown in the last line of the boxed data.

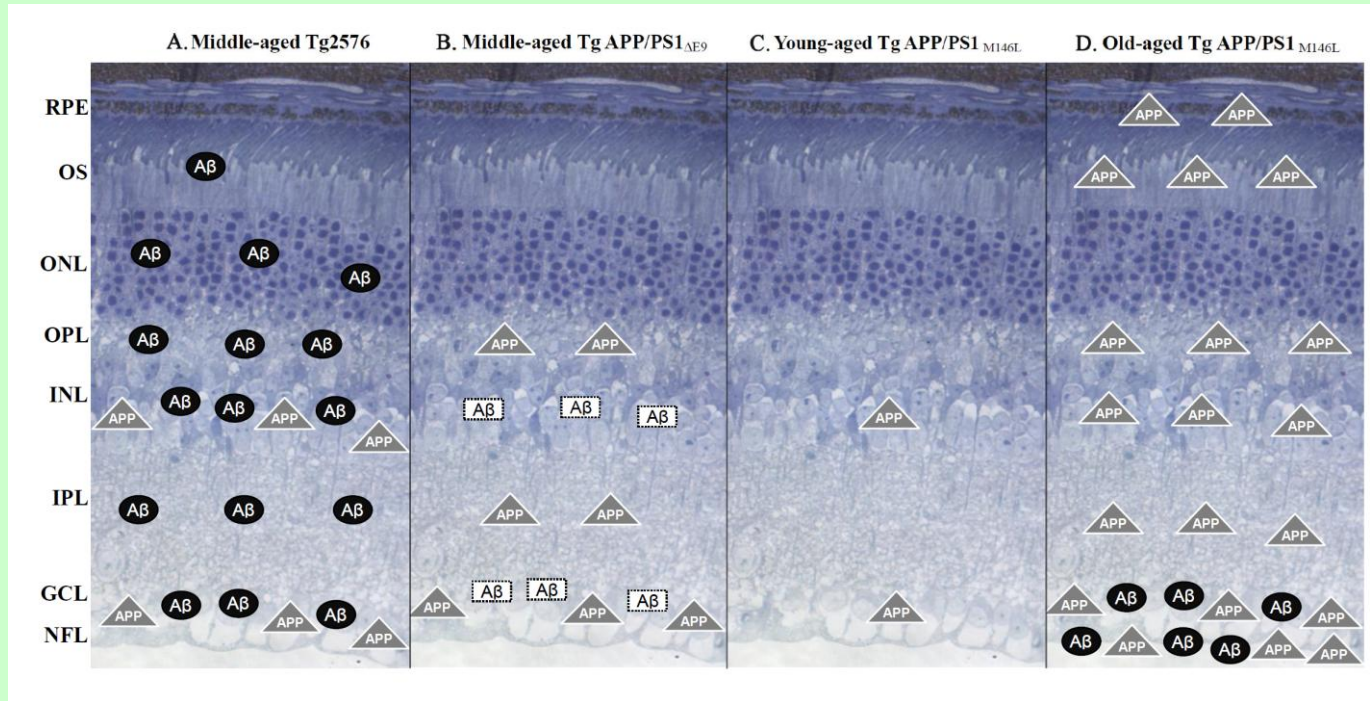
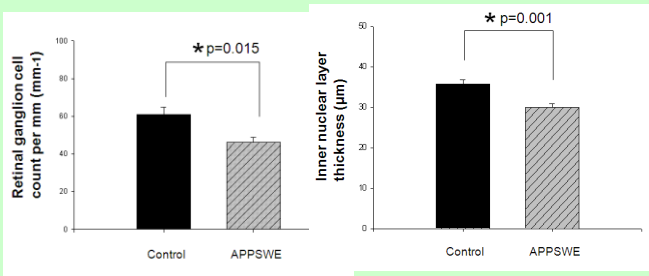
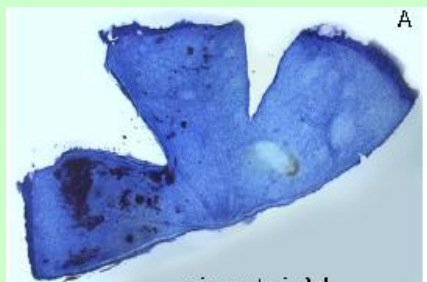
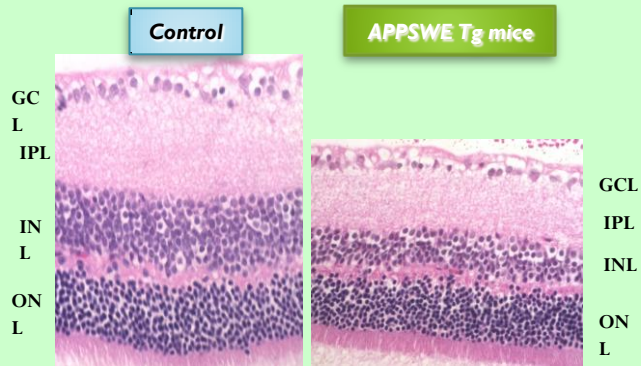
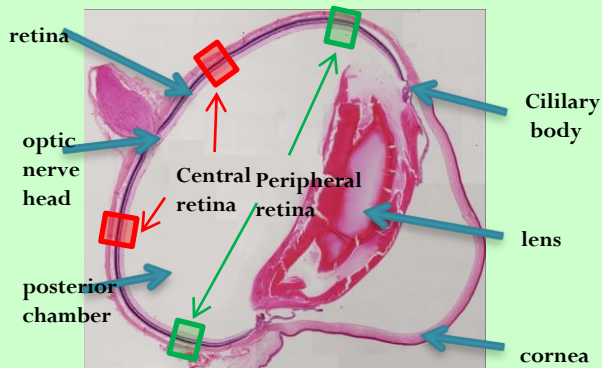
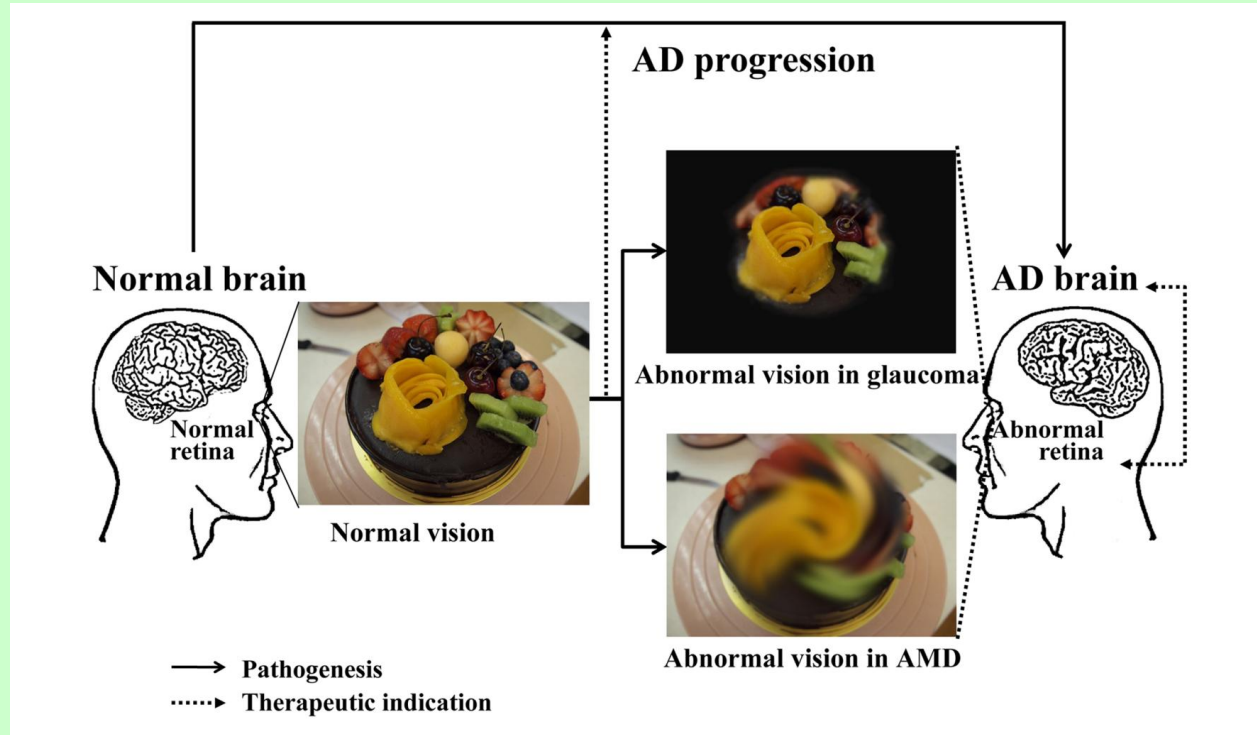


Diagram demonstrating APP expression, A β deposits in retinal layers of various kinds of AD transgenic mice. The background is a resin cross section demonstrating a layered structure of retina. *Filled color shapes* are positioned quantitatively based on the expression levels of deposits. *Unfilled color shapes* show the presence of specific deposits only but not in quantitative manner. *NFL*: nerve fiber layer; *GCL*: ganglion cell layer; *IPL*: inner plexiform layer; *INL*: inner nuclear layer; *OPL*: outer plexiform layer; *ONL*: outer nuclear layer; *OS*: outer segment; *RPE*: retinal pigment epithelium.

APP^{sw}e 轉基因老鼠中視網膜神經細胞退化

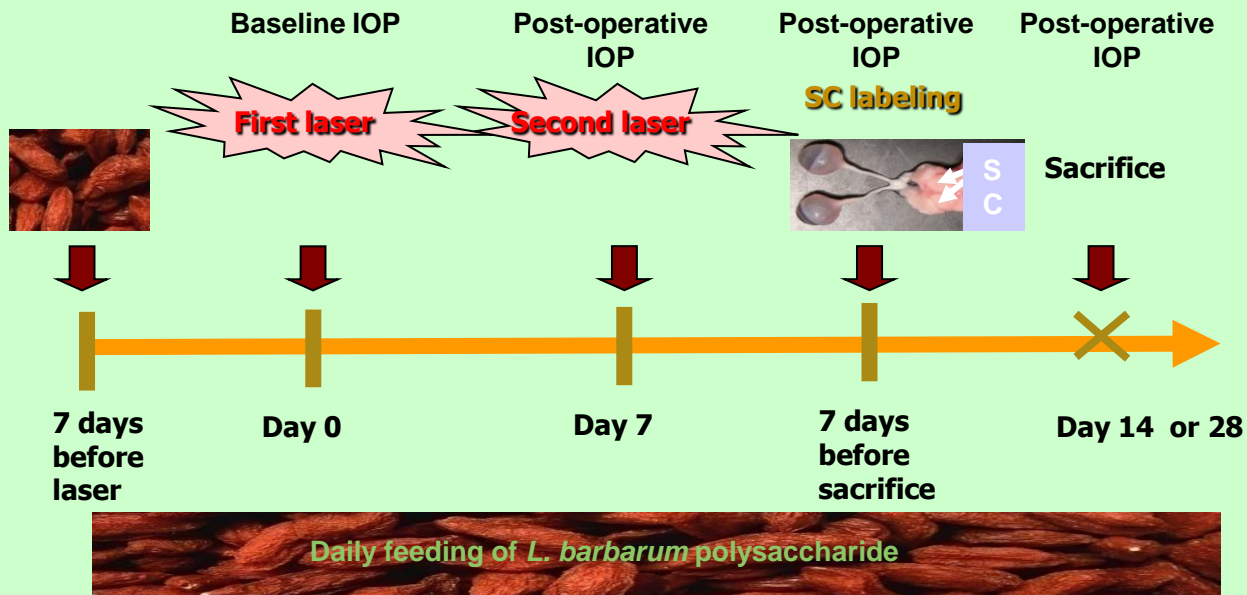


認知障礙症中青光眼的出現而引致視力衰退



枸杞子-青光眼的神经保护剂

赵健 梁玉香 郑传忠 苏国辉





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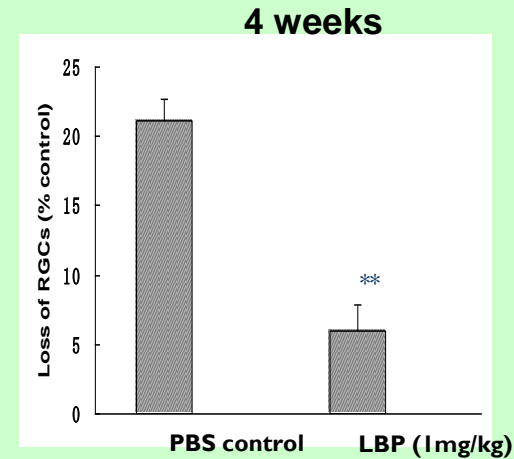
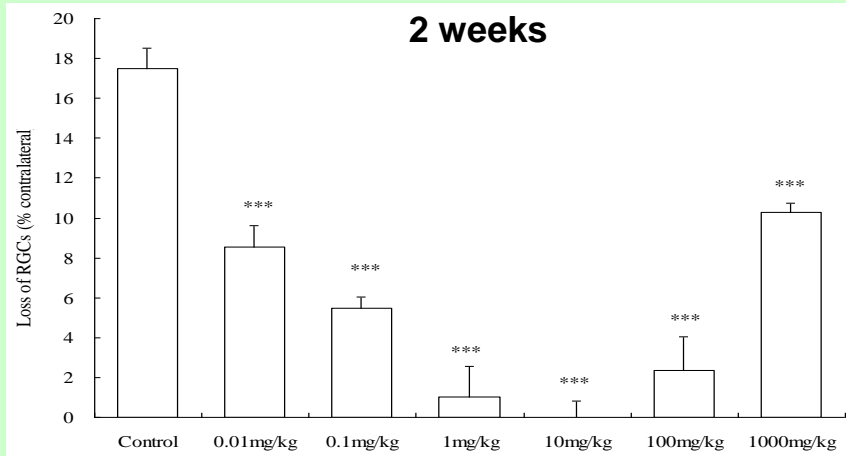
Experimental Neurology 203 (2007) 269–273

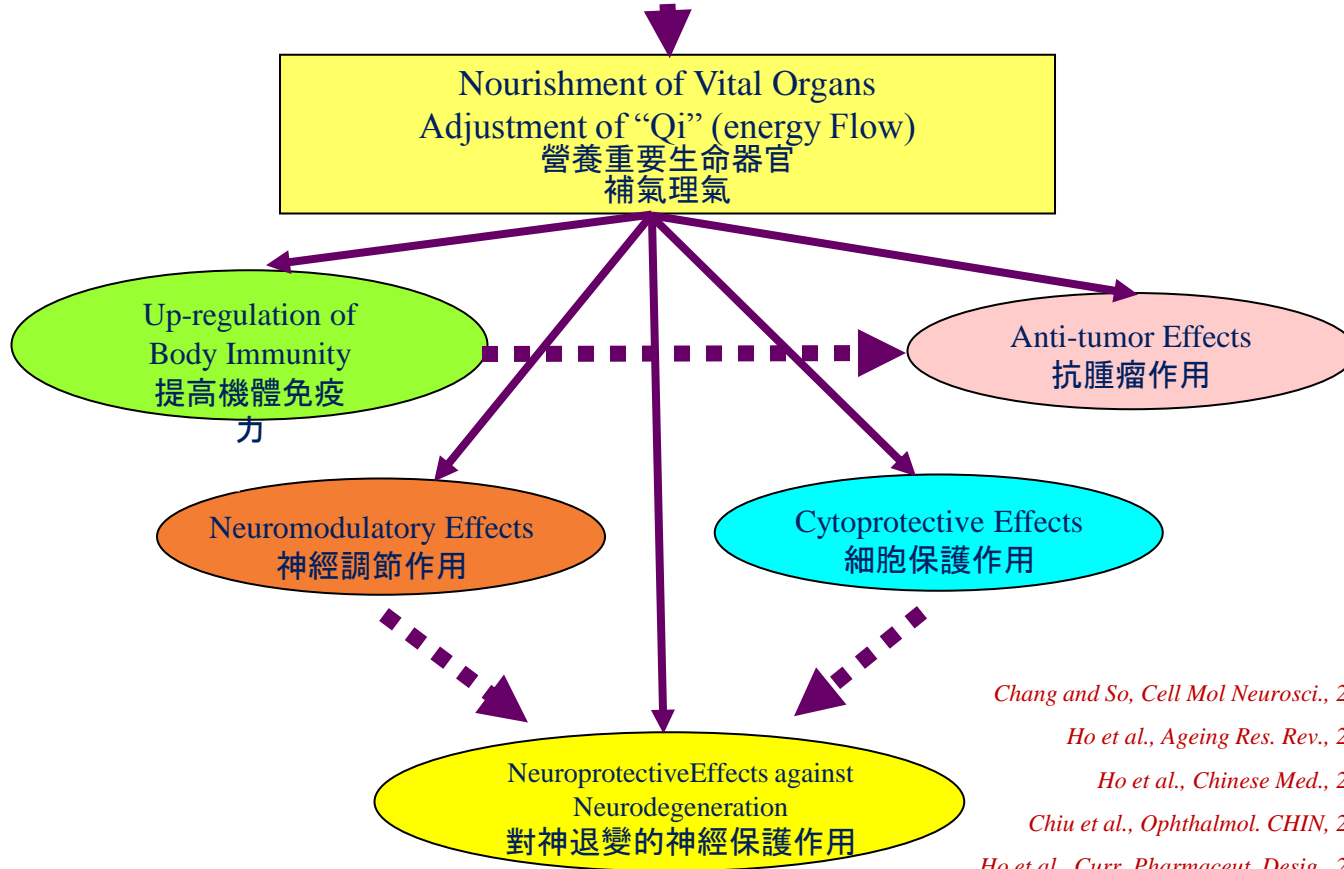
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Short Communication

Neuroprotective effects of *Lycium barbarum* Lynn on protecting retinal ganglion cells in an ocular hypertension model of glaucoma





Chang and So, Cell Mol Neurosci., 2008

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認知障礙症 並不是 正常老化過程

