Lung Cancer

Dr. John Bergman

Lung Cancer (aka Lung Carcinoma)

Two Main Types:

- Small-cell lung carcinoma (SCLC)
- Non-small-cell carcinoma (NSCLC)

Symptoms

- Coughing
- Coughing up blood
- Chronic Fatigue
- Weight loss
- Shortness of breath
- Chest pain

Sources [11-16]

Lung Cancer Statistics

More People Die from Lung Cancer than any other type of cancer

In the U.S:

- 1 out of 4 cancer deaths is from Lung Cancer
- Affects 1 in 14 men and 1 in 17 women

Worldwide:

- In 2012, lung cancer deaths = 1.59 million [21]

Causes of Lung Cancer

- **Smoking (The #1 Risk Factor)**
- Secondhand Smoke
- Radon- naturally occurring gas from rocks and dirt
- Toxic Substances- asbestos, arsenic, diesel exhaust and silica
- Radiation f[illegible]y for cancer

According to the CDC [17]

Smoking and Lung Cancer

- Smoking contributes to **80-90%** of lung cancer deaths
- Men who smoke are **23 times** more likely to develop lung cancer
- Women who smoke are **13 times** more likely develop lung cancer
- Nonsmokers have a **20 to 30 percent** greater chance of d ondhand s

Sources [18-20]

Does Smoking Cause Lung Cancer?

Study from the Journal of the National Cancer Institute
22-23

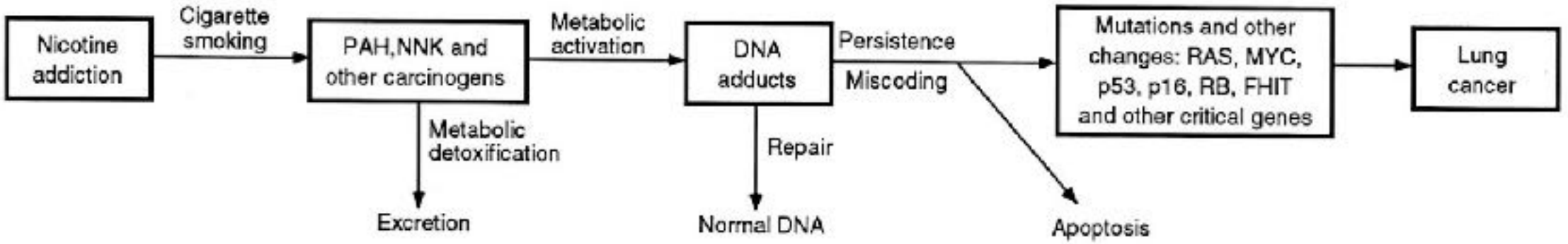
- Analysis of almost 250 studies on Smoking and Lung Cancer

"The complexity of tobacco smoke leads to some confusion about the **mechanisms** by which it causes lung cancer."

Even in the writings of distinguished scientists with great expertise in cancer causes and mechanisms, one can read statements such as:

"The carcinogenic mechanisms of tobacco smoking are not well understood."

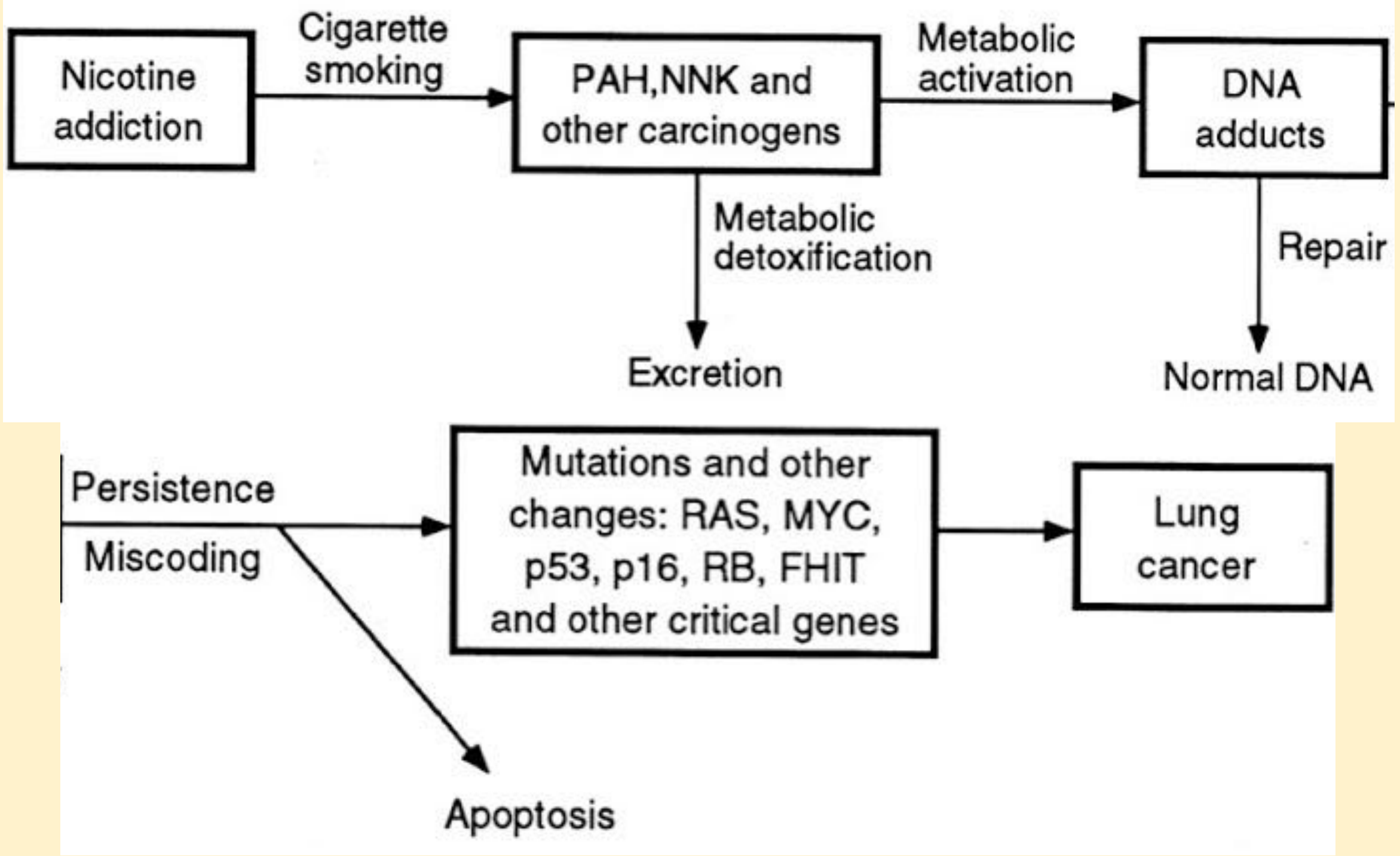
The System of Checks and Balances



Stephen S. Hecht JNCI J Natl Cancer Inst 1999;91:1194-1210

Oxford University Press

JNCI


Nicotine addiction
Cigarette smoking
PAH,NNK and other carcinogens
Metabolic activation
DNA adducts
Metabolic detoxification
Repair
Excretion
Normal DNA
Persistence
Miscoding
Mutations and other changes: RAS, MYC, p53, p16, RB, FHIT and other critical genes
Lung cancer
Apoptosis

Does Smoking Cause Lung Cancer?

"There are 55 carcinogens in cigarette smoke that have been evaluated by the International Agency for Research on Cancer (IARC) and for which there is sufficient evidence for carcinogenicity in either laboratory animals or humans"

"While extensive studies clearly document the carcinogenicity of certain cigarette smoke constituents, the results of inhalation studies of whole-cigarette smoke or its vapor and particulate phases have been less consistent."

"There are a number of operational problems inherent in these experiments."

Journal of the National Cancer Institute [22-23]

Operational Problems include:

- Humans and animals inhale smoke differently
- Most studies are done on animals
- There is No method of regulating uptake of smoke
- No method of measuring metabolism, detoxification, and DNA adduction

Conclusion:

“Further research is needed to identify the putative tumorigenic components of the vapor phase.”

Journal of the National Cancer Institute [22-23]

Does Smoking Cause Lung Cancer?

"There is a good general understanding of the mechanisms by which these tobacco smoke carcinogens interact with DNA to form adducts, and considerable information is available about the repair, persistence, and miscoding properties of these adducts."

"There are many aspects of these processes that require further study, however, little is known about the levels, persistence, and repair of specific carcinogen DNA adducts in the lungs of smokers or the effects of chronic smoking on these factors."

Journal of the National Cancer Institute [22-23]

The Reality of Smoking

"The complexity of tobacco smoke causes confusion in the literature about the **mechanisms** by which it induces lung cancer.

Some authors oversimplify by referring to this complex mixture as "**tar**" or by attempting to implicate only one substance—such as BPDE—in cancer causation, while others maintain that the level of complexity is such that the mechanism is unknown.

…The reality lies between these extremes."

Journal of the National Cancer Institute [22-23]

The Reality of Smoking

"Fewer than **20%** of smokers will get lung cancer. Susceptibility will depend in part on the **balance** between carcinogen **metabolic activation** and **detoxification** in the smokers.

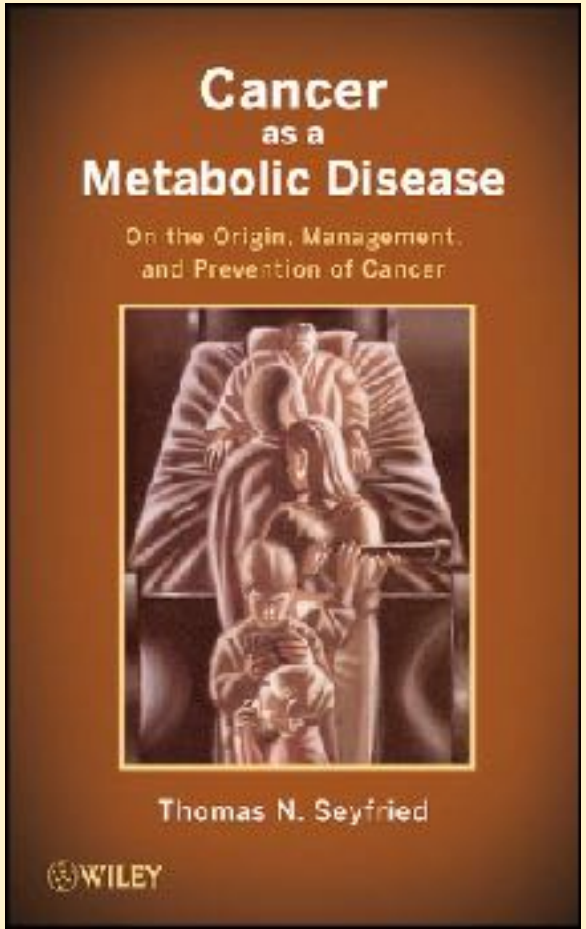
This is an important area requiring intense further

Cancer is a Metabolic Disease, NOT a Genetic Disease

- Dr. Thomas N. Seyfried: world renowned researcher
- Spent the majority of career researching cancer and genetics

"**No real progress** has been made in the management of advanced or metastatic cancer for more than **40 years.**
The number of people dying each year and each day has changed little in more than 10 years."

Source [19, 23]



Cancer is a Metabolic Disease

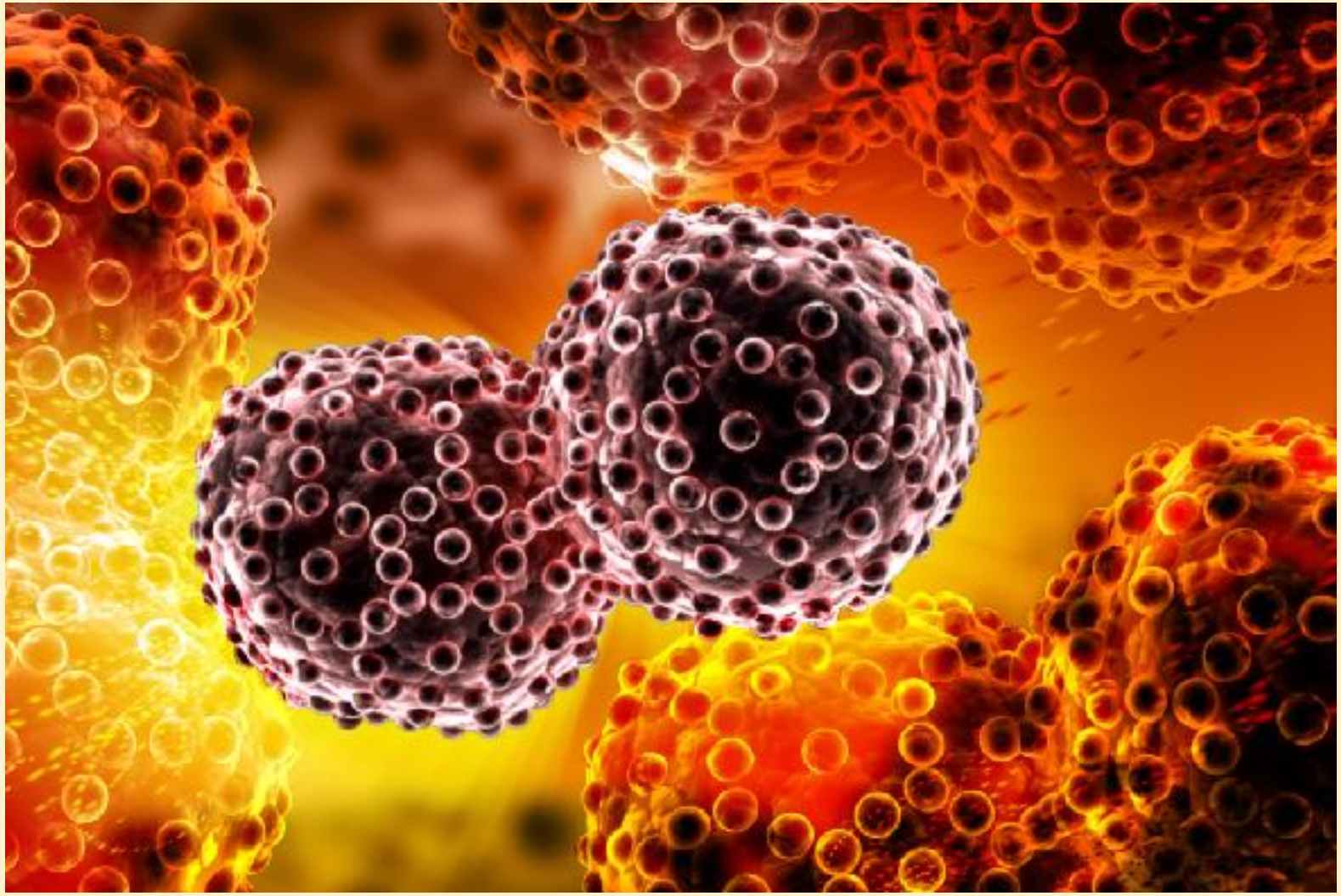
- The view that most cancer is a genetic disease is no longer credible.
- Most cancer, regardless of cell or tissue origin, is a singular disease of respiratory insufficiency coupled with compensatory fermentation.

- There are not really hundreds of cancer types that need to be studied separately.

  There is a common mechanism for treating all cancers.

Factors that can cause Respiratory Insufficiency and Cancer

- Age
- Viral
- Infections
- Hypoxia
- Inflammation
- Environmental Toxin
- Radiation
- Carcinogens



Cancer is a Metabolic Disease

- Cancer cells depend largely on glucose and glutamine metabolism for survival, growth, and proliferation.
- Restricted access to glucose and glutamine will compromise cancer cell growth and survival. **When cancer cells do not have glucose to nourish them, they die.**

- Protection of mitochondria from oxidative damage will prevent or reduce risk of cancer. **Antioxidants prevent cancer.**

Cancer is a Metabolic Disease

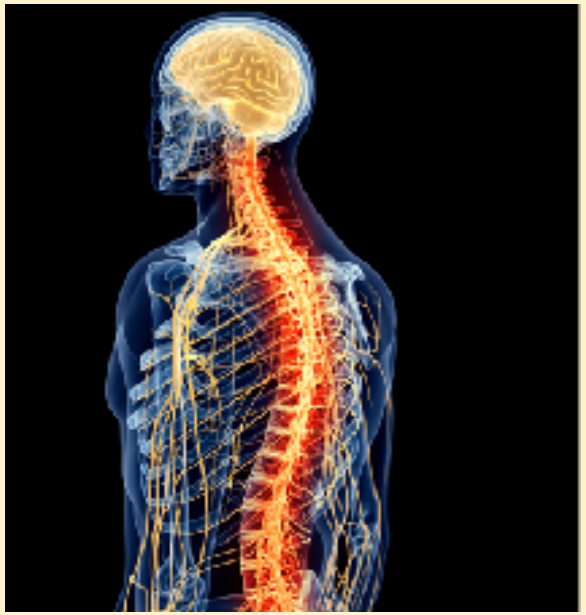
"Lifestyle changes will be needed to manage and prevent cancer. This means that **there is no magic pill** that we can take to prevent or cure cancer.

We must change our relationship with food and lifestyle to prevent and cure cancer."

"A new era will emerge for cancer management and prevention, once cancer becomes recognized as a metabolic disease."

Source [19, 23]

The 5 Keys to Health and Healing



Proper nerve supply

Regular Exercise

Proper Nutrition

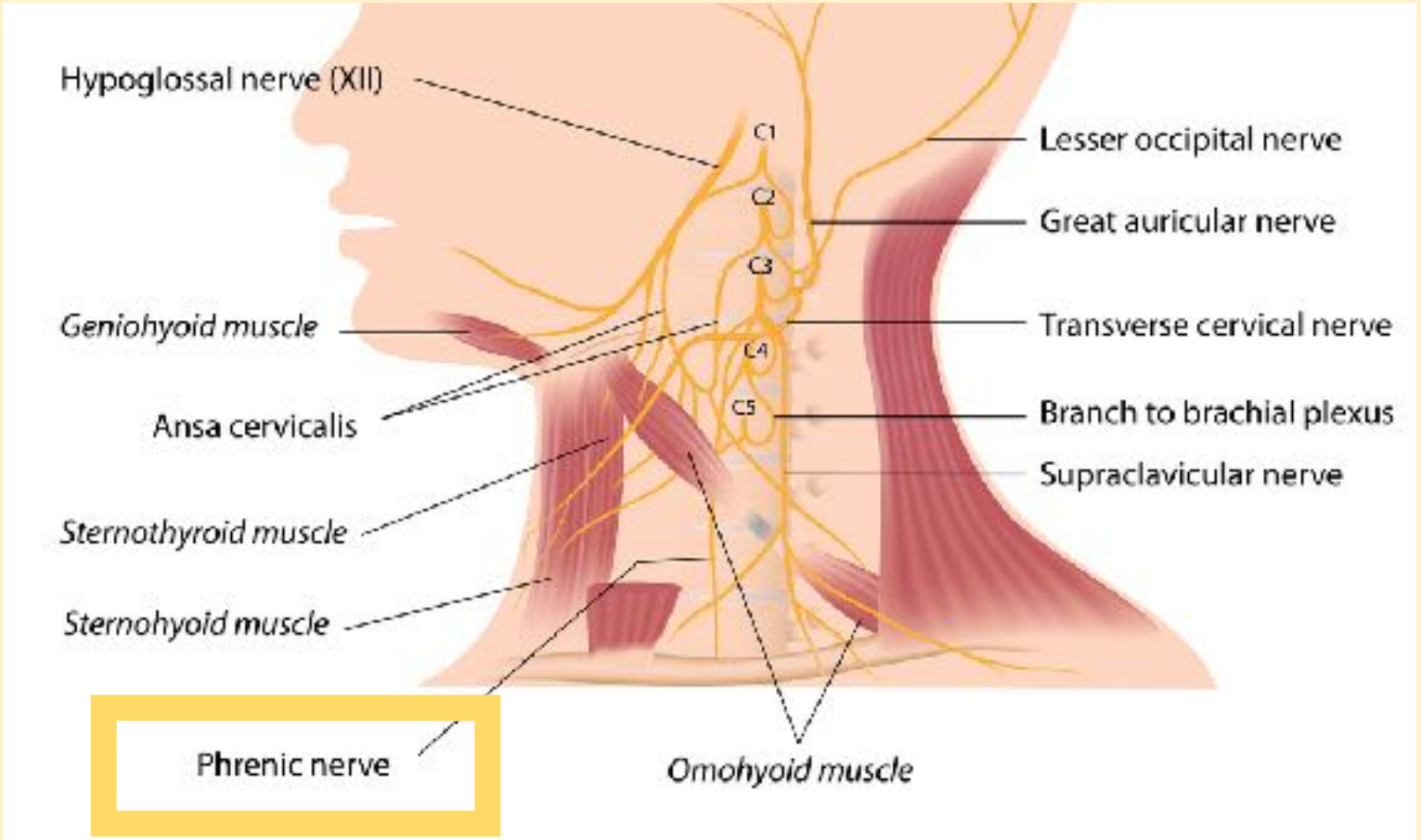
Sufficient Rest

Prayer and Meditation

The Nervous System

- The nerves that originate from C3-C5 innervate the diaphragm
- Mnemonic for remembering the Innervation of the Lungs:

C3, C4, C5 Keep you Alive!



Smoking and Vitamin Deficiencies

- Research has shown that smokers are often **very deficient in a number of essential, protective nutrients**, and a lack of any one of them could lead to various disease states, especially **lung cancer**

Deficiencies caused by smoking:

- Vitamin C
- Vitamin A
- Glutathione

Sources [26-28]

Smoking and Vitamin C

American Journal of Public Health [24]

- **35 percent** of the smokers were either marginally or severely deficient in vitamin C. Even some of those supplementing with vitamin C were found to be deficient in vitamin C

Journal of Inflammation [25]

- Exposure to the smoke resulted in progressive protein damage, inflammation, apoptosis and lung injury.
- However, supplementing with 15 milligrams of vitamin C per day **prevented all of these damaging effects from occurring**

Vitamin C

- An antioxidant, **helps protect your lungs** from free radical damage, helps regenerate your vitamin E supplies, and improves iron absorption
- Increase your intake of such vitamin-C-rich foods as **citrus fruits, cantaloupe, strawberries, tomatoes, broccoli, cabbage, kiwi fruit, sweet red peppers, and potatoes** may exert a protective effect against not only lung problems due to smoking, but against second-hand smoke as well.

Vitamin A

- An important vitamin for healthy vision, immune system function, and cell growth.
- It works synergistically with a number of other vitamins and minerals, including vitamins D, K2, zinc, and magnesium, without which it cannot perform its functions.

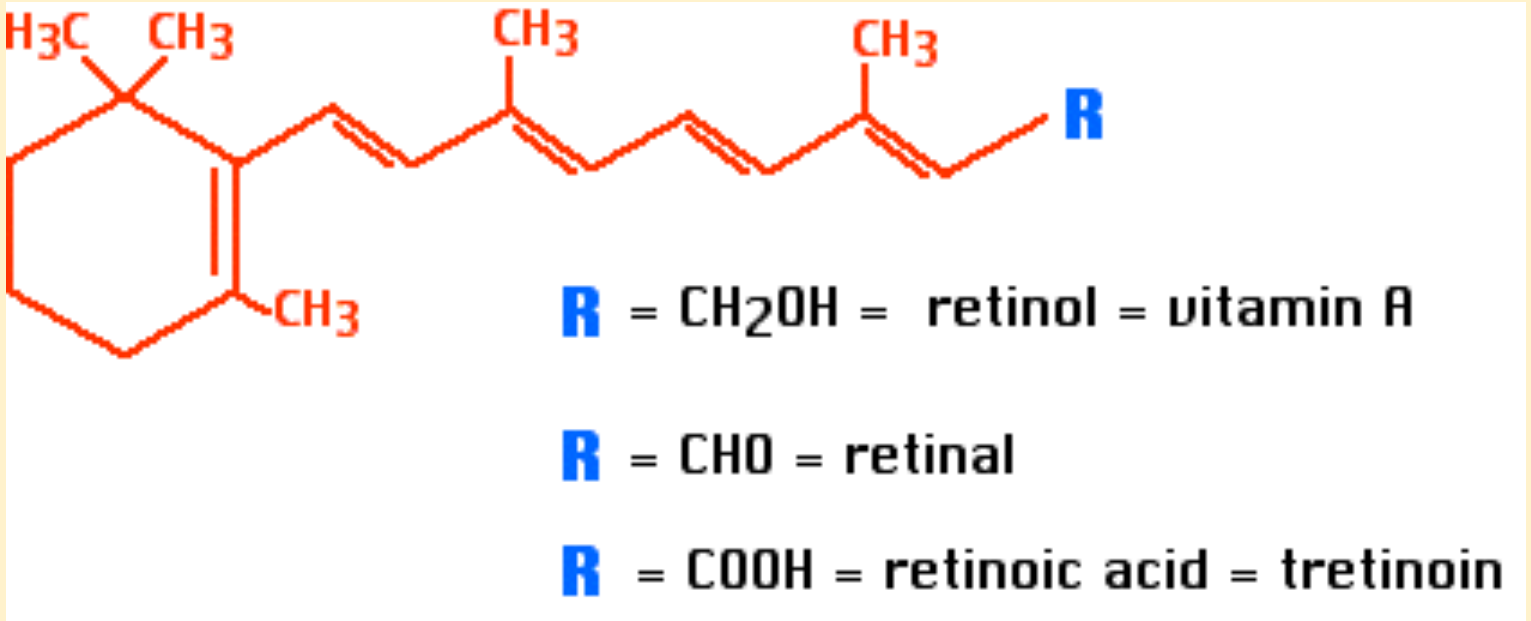
2 main categories of Vitamin A

- Retinoids (fat-soluble, biologically active vitamin A found in animal foods)
- Carotenoids (water-soluble pro-vitamins found in plant foods)
  - Carotenes
  - Xanthophylls

Sources 31-35

Retinoids

- Retinol: Bioactive form of vitamin A, which is converted into retinal, retinoic acid, and retinyl esters
- Retinal: Vision health and healthy growth
- Retinoic acid: Skin health, tooth remineralization, bone growth



Sources [31-35]

Carotenoids

Carotenes

- Alpha-carotene: Antioxidant with potential anti-cancer activity; stimulates intercellular communication

Xanthophylls

- Astaxanthin: High-potency antioxidant with anti-inflammatory properties, shown to benefit rheumatoid arthritis; athletic performance; heart- and brain health; age-related macular degeneration. Also protects cells from UV radiation

- Beta-cryptoxanthin: Antioxidant with anti-cancer activity. Studies show it may reduce risk of lung- and colon cancer by 30 percent, and rheumatoid arthritis by 41 percent

Sources [31-35]

Sources for Bioavailable Vitamin A (Retinoids)

- Pasture-raised beef or duck liver
- Eggs from organic pastured chickens
- Raw organic Butter and cheese from grass-fed cows
- Whole raw milk and heavy cream from organic grass-fed cows
- Shrimp
- Fatty fish like sardines

Pro-vitamin A Carotenoid-rich foods

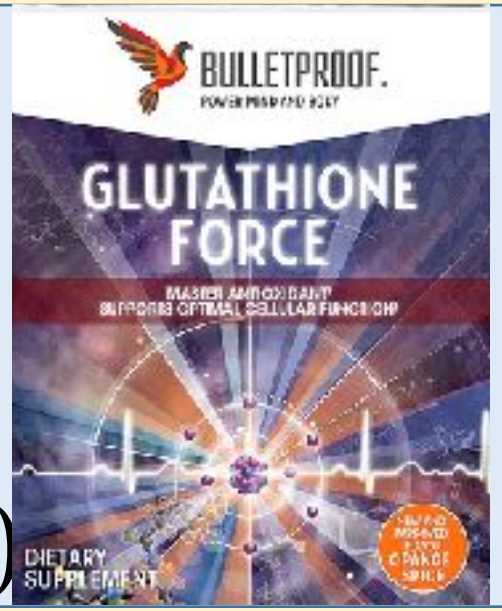
- Carrots
- Sweet Potatoes
- Kale
- Spinach
- Butternut squash
- Mustard greens and collard gree

Glutathione

- Master antioxidant
- Main detoxification system

Food Sources:

- Whey Protein
- Sulfur rich compounds (cruciferous family)



"Glutathione is a vital intracellular and extracellular protective pulmonary antioxidant. It plays a key role in regulating oxidant-induced lung epithelial cell function and also in the control of pro-inflammatory processes."

(Annals of Allergy, Asthma and Immunology [51])

Black Seed

Also Known as:

- Nigella Sativa
- Roman coriander
- Black sesame
- Black cumin
- Black caraway
- Onion seed

Black Seed

Over **800** published, peer reviewed studies proving the benefits of Black Seed including:[19]

- Analgesic (pain killing)
- Anti-Bacterial
- Anti-Inflammatory
- Anti-Ulcer
- Anti-Fungal
- Antioxidant
- Antiviral
- Bronchodilator
- Gluconeogenesis Inhibitor (Anti-Diabetic)
- Insulin Sensitizing
- Hepatoprotective (Liver Protecting)
- Hypotensive
- Interferon Inducer
- Renoprotective (Kidney Protecting)

Source [20]

Isothiocyanate and Cancer

- A phytonutrient known for its potent anti-cancer activity

"Cruciferous vegetables such as cabbage and near relatives of cabbage such as broccoli and cauliflower…contain compounds called isothiocyanates which we believe to be responsible for the **cancer-preventive and anti-carcinogenic activities** in these vegetables."

Journal of Carcinogenesis [37]

Sources of Isothiocyanate:

- Broccoli and broccoli sprouts
- Brussel sprouts
- Cauliflower
- Cabbage
- Arugula
- Watercress
- Horseradish

"**Broccoli and broccoli sprouts** have the highest amount of the isothiocyanates"

Journal of Carcinogenesis [37]

Curcumin

- A derivative of turmeric and the pigment that gives its yellow-orange color

Curcumin and Cancer

- Inhibit the proliferation of tumor cells
- Inhibit the transformation of cells from normal to tumor
- Help the body destroy mutated cancer cells so they cannot spread throughout the body
- Decrease inflammation
- Help prevent the development of additional blood supply necessary for cancer cell growth (angiogenesis)

Curcumin and Lung Cancer

- Curcumin inhibits lung cancer cell metastasis.

(Journal of Clinical Experimental Metastasis) [43]

- Curcumin inhibits COPD-like airway inflammation and lung cancer progression

(Journal of Carcinogenesis) [44]

- Curcumin can inhibit tumor growth

(Phytotherapy Research Journal) [45]

- Curcumin induces programmed cell death in human non-small cell lung cancer cells.

(International Journal of Cancer Research and Treatment) [50]

Curcumin and Lung Cancer

"Curcumin is able to exert anti-inflammatory, antiplatelet, antioxidative, hepatoprotective and antitumor activities, particularly against cancers of the liver, skin, pancreas, prostate, ovary, lung and head neck, as well as having a positive effect in the treatment of arthritis."

(Journal of Experimental Therapeutic Medicine) [48]

"Curcumin might be an effective antimetastatic agent with a mechanism of anti-invasion via the regulation of certain gene expressions."

(Journal of Molecular Pharmacology) [49]

Vitamin D

- Calcitriol (activated Vitamin D) the most potent steroid hormone in your body
- Vitamin D levels are low in people with cancer
- Induces cell differentiation and controls cell proliferation
- There are over **830 peer reviewed scientific** studies showing its effectiveness in the treatment of cancer. [52]
- Normalizing your vitamin D levels will **reduce your risk of cancer by over 50 percent**, but there are a number of other strategies that are also important in your cancer-prevention plan. [53,54]

A Healthy Diet and Lung Cancer

Fruit and vegetable consumption and risk of lung cancer: a dose-response meta-analysis of prospective cohort studies.

(Journal of Lung Cancer) [38]

“Our analysis indicated that intake of vegetables and fruits may have a protective effect on lung cancer”

(European Journal of Clinical Nutrition) [39]

A moderate level of fruit consumption is associated with a decreased risk of lung cancer

(Journal of Cancer Science) [40]

A Healthy Diet and Lung Cancer

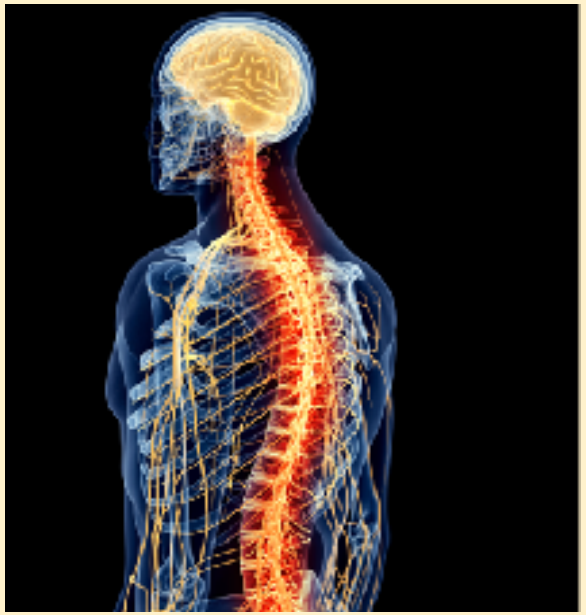
Consumption of a diet rich in cruciferous vegetables may reduce the risk of lung cancer among smokers.

(BMC Cancer) [41]

Intakes of green leafy vegetables, β-carotene-rich vegetables, watermelon, vitamin A, and carotenoids were each inversely associated with lung cancer risk

(Nutrition and Cancer Journal) [42]

The 5 Keys to Health and Healing



Proper nerve supply

Regular Exercise

Proper Nutrition

Sufficient Rest

Prayer and Meditation

www.owners-guide.com

Private Facebook

Power Points

VIDEOS

Handouts

Free 7 day Trial
Free access if You Are a
Bergman Family Chiropractic Patient

References

1. http://mercola.fileburst.com/PDF/703-highly_cited_vitamin_D_cancer%5B3%5D.pdf
2. Nutrition Reviews August 2007 Volume 65, Supplement 1, pp. 91-95(5) (Registration Required)
3. The Journal of Steroid Biochemistry and Molecular Biology March 2007; 103(3-5):708-11 Eurekalert August 21, 2007
4. http://articles.mercola.com/sites/articles/archive/2010/11/20/ronald-hunninghake-on-vitamin-c.aspx
5. Annals of Allergy, Asthma & Immunology Volume 92, Issue 4, April 2004, Pages 459-463, doi: 10.1016/S1081-1206(10)61783-8
6. http://www.ncbi.nlm.nih.gov/pubmed?term=nigella%20sativa
7. http://www.greenmedinfo.com/blog/black-seed-remedy-everything-death
8. http://healthimpactnews.com/2014/the-cancer-industry-is-too-prosperous-to-allow-a-cure/
9. Cancer as a Metabolic Disease, Thomas N. Seyfried, 2012, John Wiley & Sons, Hoboken NJ,
10. Clin Oncol (R Coll Radiol). 2004 Dec;16(8):549-60.
11. "Lung Carcinoma: Tumors of the Lungs". Merck Manual Professional Edition, Online edition.
12. "Non-Small Cell Lung Cancer Treatment –Patient Version (PDQ®)". NCI. May 12, 2015.
13. Falk, S; Williams, C (2010). "Chapter 1". Lung Cancer—the facts(3rd ed.). Oxford University Press. pp. 3–4. ISBN 978-0-19-956933-5.
14. World Cancer Report 2014. World Health Organization. 2014. pp. Chapter 5.1. ISBN 9283204298.

References

16. Horn, L; Lovly, CM; Johnson, DH (2015). "Chapter 107: Neoplasms of the lung". In Kasper, DL; Hauser, SL; Jameson, JL; Fauci, AS; Longo, DL; Loscalzo, J. Harrison's Principles of Internal Medicine (19th ed.). McGraw-Hill. ISBN 978-0-07-180216-1.
17. http://www.cdc.gov/cancer/lung/basic_info/risk_factors.htm
18. The Health Consequences of Smoking: A Report of the U.S. Surgeon General, 2004.
19. U.S. Department of Health and Human Services. The Health Consequences of Smoking—50 Years of Progress: A Report of the Surgeon General, 2014.
20. U.S. Department of Health and Human Services. The Health Consequences of Involuntary Exposure to Tobacco Smoke: A Report of the Surgeon General, 2006.
21. http://www.who.int/mediacentre/factsheets/fs297/en/
22. JNCI J Natl Cancer Inst (1999) 91(14): 1194-1210.doi: 10.1093/jnci/91.14.1194
23. http://jnci.oxfordjournals.org/content/91/14/1194.full
24. American Journal of Public Health, 1989:79(2): 158–162, G Schectman, J C Byrd, and H W Gruchow, The Influence of Smoking on Vitamin C Status in Adults
25. PubMed, J Inflamm (Lond). 2008;5:21, Shuvojit Banerjee, Ranajoy Chattopadhyay, Arunava Ghosh, Hemanta Koley, Koustubh Panda, Siddhartha Roy, Dhrubajyoti Chattopadhyay, and Indu B Chatterjee, Cellular and Molecular Mechanisms of Cigarette Smoke-induced Lung Damage and Prevention by Vitamin C
26. J Nutr. 2000 May;130(5):1159-65. 2000, Baybutt RC, Hu L, Molteni A., Vitamin A Deficiency Injures Lung and Liver Parenchyma and Impairs Function of Rat Type II Pneumocytes, (Accessed March 4, 2009)
27. Am J Respir Crit Care Med, 2008 Dec 1;178(11):1187, Emphysema and Airway Obstruction as Risk Factors for Lung Cancer, (Accessed March 4, 2009)
28. Oxford Journals, 1992, Geert van Poppel, Nico de Vogel, Peter J. van Balderen and Frans J. Kok, Increased Cytogenic Damage in Smokers Deficient in Glutathione S-tranferase Isozyme μ, (Accessed March 3, 2009)
29. BBCNews, 2004, Smokers Will Die '10 Years Early',
30. BMJ 2004;328:1519: http://www.bmj.com/content/328/7455/1519
31. http://articles.mercola.com/sites/articles/archive/2015/11/16/vitamin-a-types.aspx

References

32. Worldshealthiestfoods.org Vitamin A
33. Journal of Nutrition 2004 Jan;134(1):237S-240S
34. Biochim Biophys Acta. 2012 Jan; 1821(1): 113–123
35. 12 Am J Clin Nutr. 2000;71:878-84
36. Journal of the National Cancer Institute April 7, 1999;91:605-613.
37. Carcinogenesis. 2008 Dec;29(12):2360-8. doi: 10.1093/carcin/bgn241.
38. Lung Cancer. 2015 May ;88(2):124-30. Epub 2015 Feb 26. PMID: 25747805
39. Eur J Clin Nutr. 2015 Apr 29. Epub 2015 Apr 29. PMID: 25920421
40. Cancer Sci. 2015 May 29. Epub 2015 May 29. PMID: 26033436
41. BMC Cancer. 2010 ;10:162. Epub 2010 Apr 27. PMID: 20423504
42. Nutr Cancer. 2013 ;65(1):51-61. PMID: 23368913
43. Clin Exp Metastasis. 2000;18(7):539-45. PMID: 11688958
44. Carcinogenesis. 2009 Nov;30(11):1949-56. Epub 2009 Sep 30. PMID: 19793800
45. Phytother Res. 2010 Jan 13;24(2):189-192. Epub 2010 Jan 13. PMID: 20077433
46. Int J Clin Exp Med. 2015;8(6):8948-8957. Epub 2015 Jun 15. PMID: 26309547
47. Biofactors. 2015 Nov 12 ;41(6):431-42. Epub 2015 Dec 8. PMID: 26643788
48. Exp Ther Med. 2015 Nov ;10(5):1615-1623. Epub 2015 Sep 17. PMID: 26640527
49. Mol Pharmacol. 2004 Jan;65(1):99-110. PMID: 14722241
50. Anticancer Res. 2010 Jun;30(6):2125-33. PMID: 20651361