

A bouquet of pink flowers with green leaves is placed on a wooden surface. The flowers are in various stages of bloom, and the leaves are long and narrow. The background is a rustic wooden table.

# Phytomedicine: Using Plant as Medicine In Modern Era

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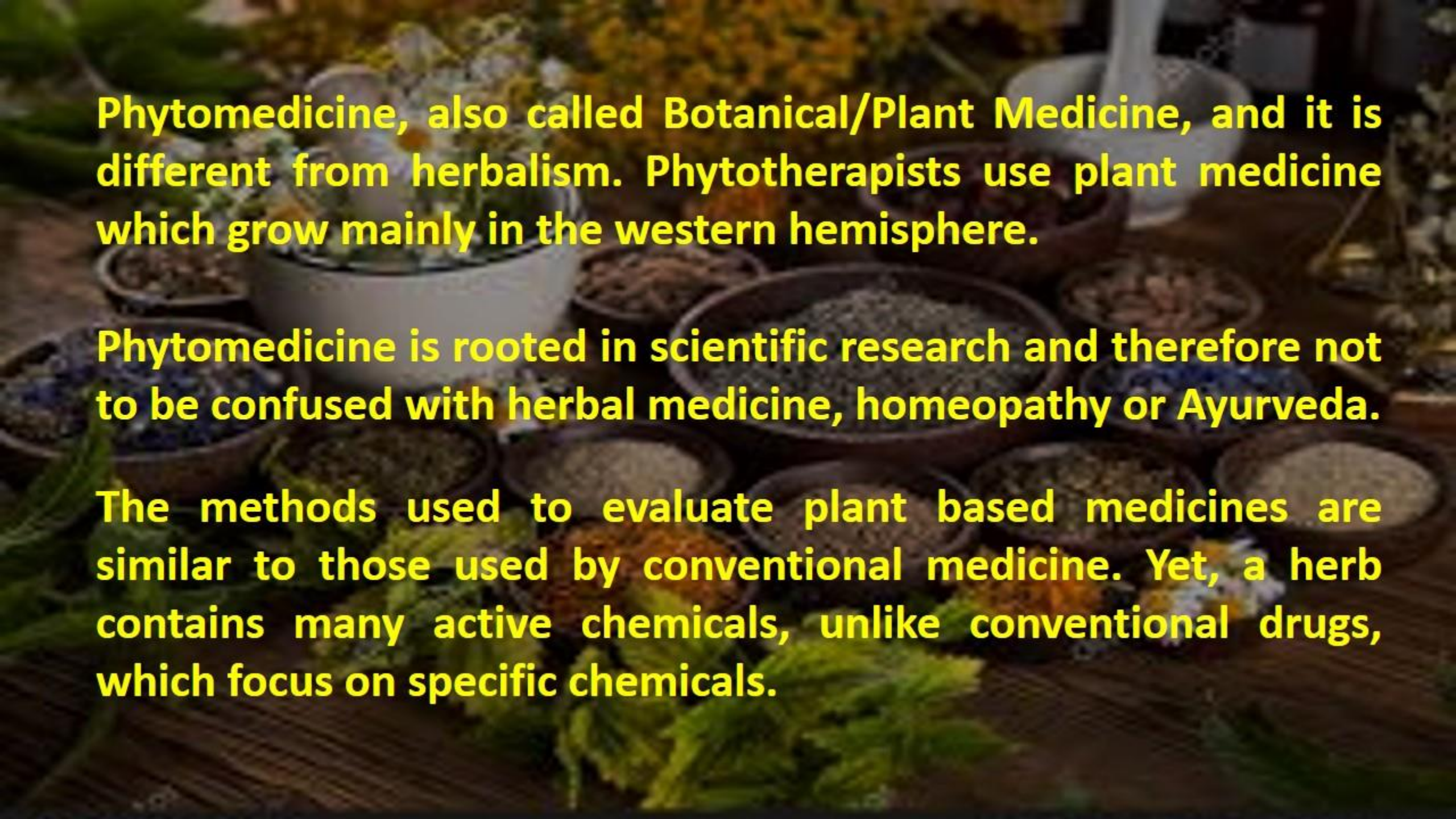
# Global Use of Herbal Medicine

The use of herbal medicinal products and supplements has increased tremendously over the past three decades with not less than 80% of people worldwide relying on them for some part of primary healthcare. Although therapies involving these agents have shown promising potential with the efficacy of a good number of herbal products clearly established, many of them remain untested and their use are either poorly monitored or not even monitored at all.



Front Pharmacol. 2013; 4: 177.





**Phytomedicine, also called Botanical/Plant Medicine, and it is different from herbalism. Phytotherapists use plant medicine which grow mainly in the western hemisphere.**

**Phytomedicine is rooted in scientific research and therefore not to be confused with herbal medicine, homeopathy or Ayurveda.**

**The methods used to evaluate plant based medicines are similar to those used by conventional medicine. Yet, a herb contains many active chemicals, unlike conventional drugs, which focus on specific chemicals.**



## Some Facts

**Herbal Medicine** - The study or practice of the medicinal and therapeutic use of plants

**Phytomedicine** - Modern and science based herbal medicine

Pharmacognosy is the heart of Phytomedicine

Only qualified phytotherapist is allowed to treat patients

The phytomedicine is not given along with other medication

Phytomedicine is standardized and considered to be safe



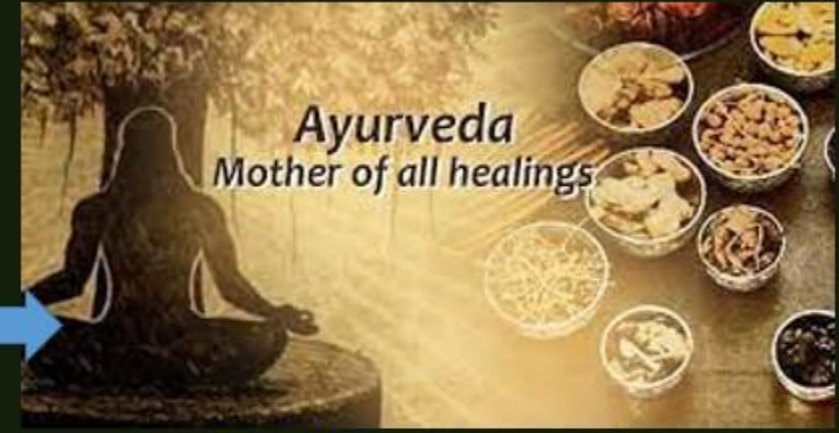
# Evolution of Phytomedicine



**Hunter gatherer**



**Use plant as medicines**



**Traditional Knowledge**



**Herbal Medicine**



**Scientific Intervention**



**Standardization & Production**



**Phytomedicine**



# Forest is Our Lifeline

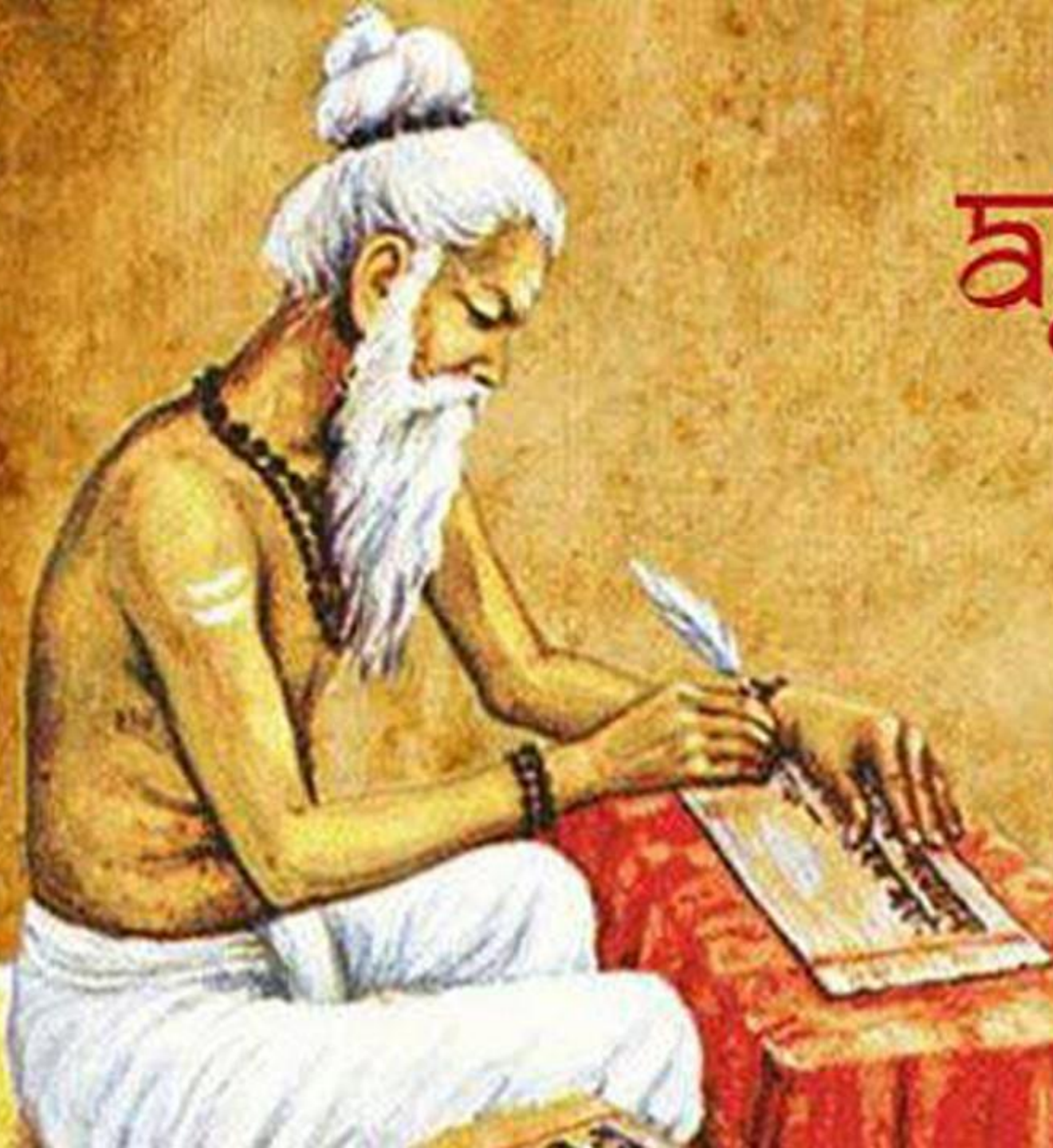
- Oxygen
- Fruits and Vegetables.
- Timber and wood.
- urpentine, latex (rubber raw product)
- Spices, resin, gum.
- Medicinal herb



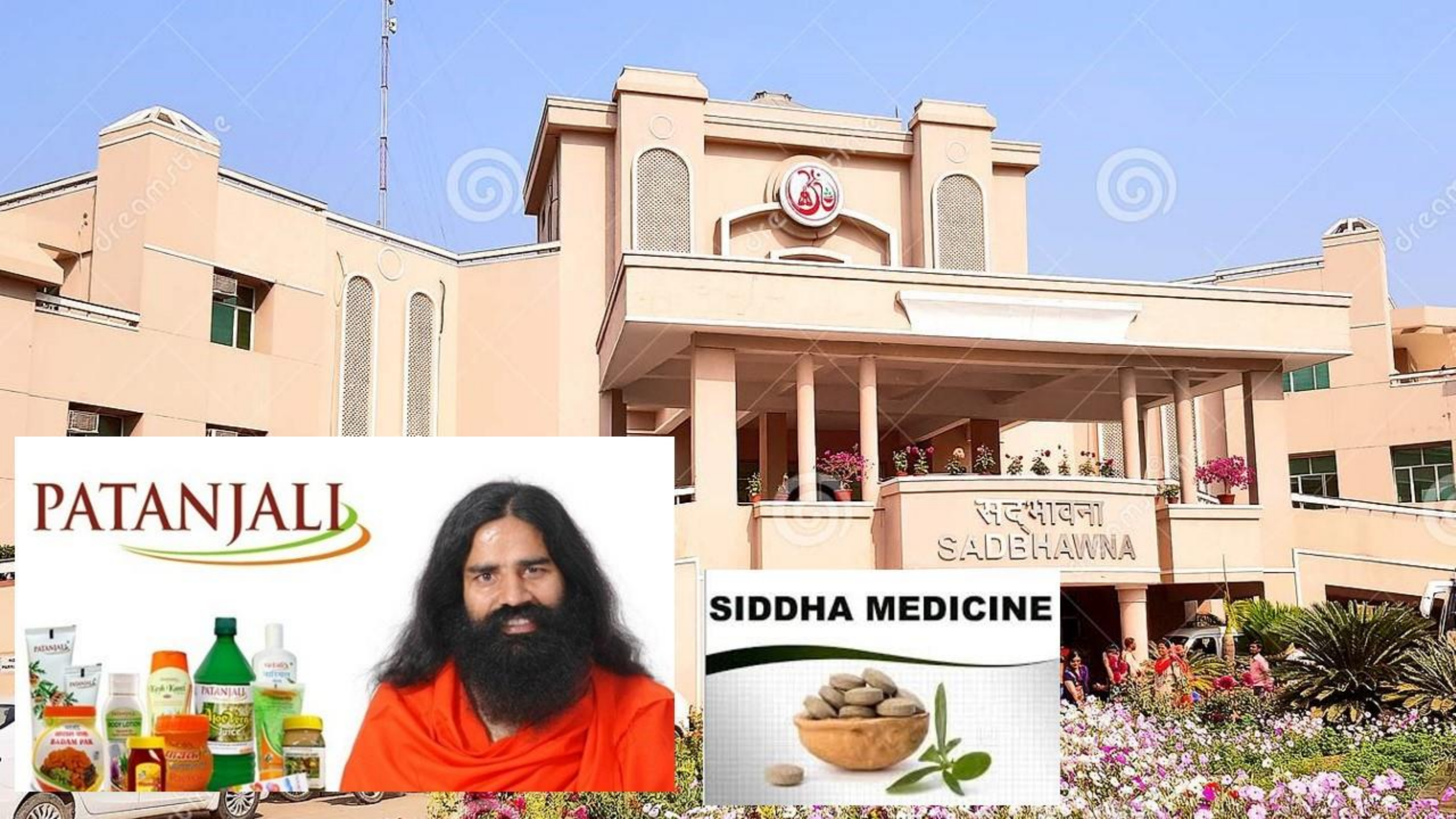


# ayurveda

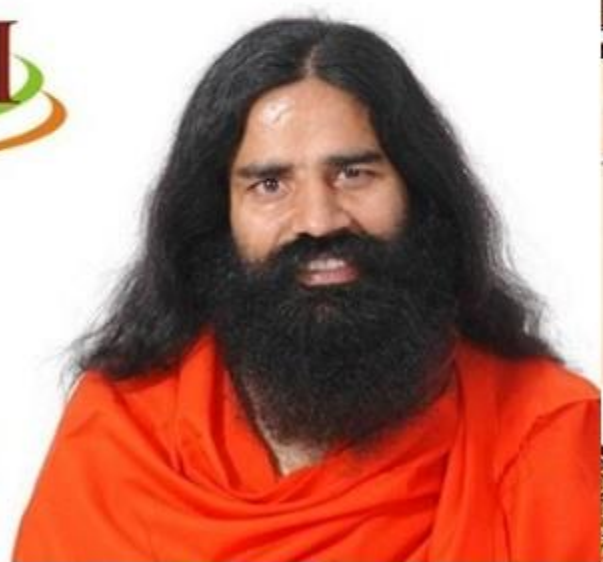
the science of life







PATANJALI



सद्भावना  
SADEHAWNA

SIDDHA MEDICINE



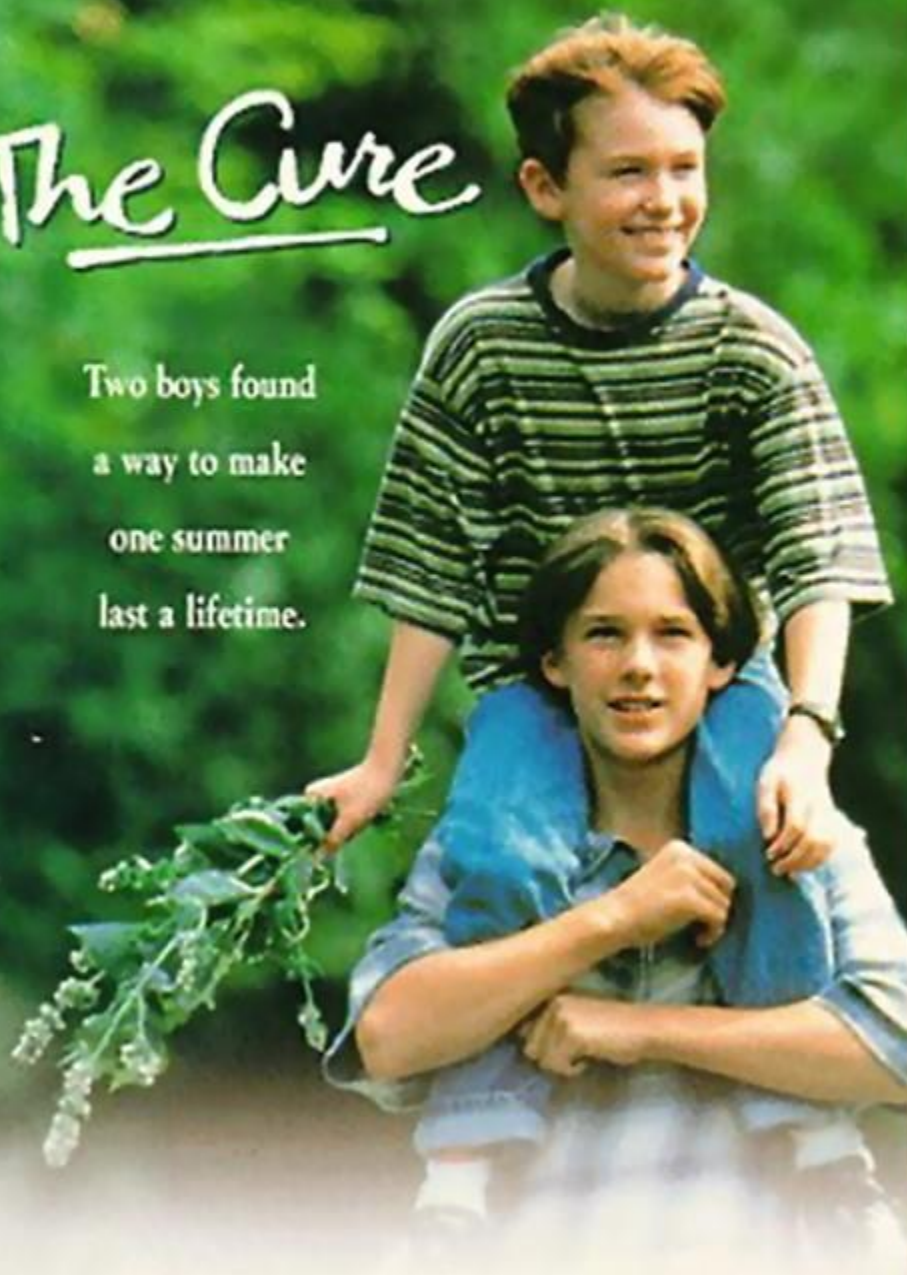


Joseph Mazzello

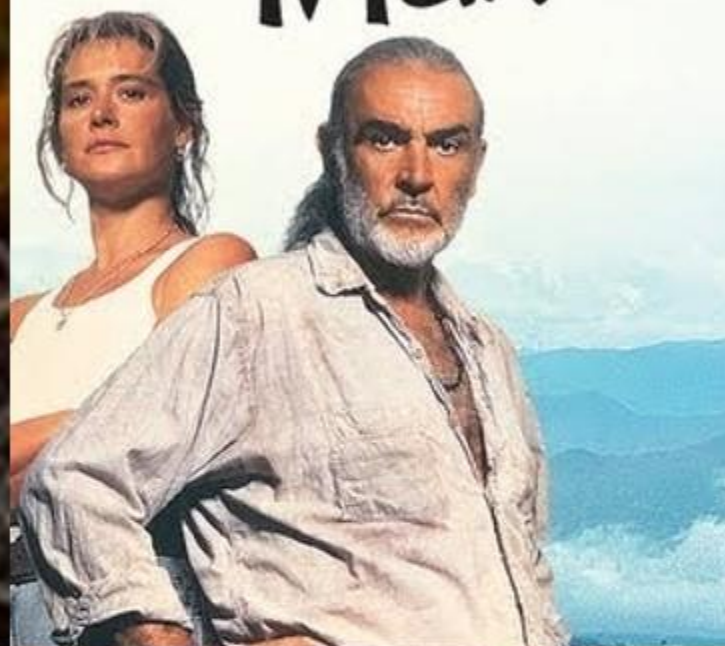
Brad Renfro

# The Cure

Two boys found  
a way to make  
one summer  
last a lifetime.



# Medicine Man







***Catharanthus roseus* (Madagascar periwinkle)**



*Catharanthus roseus* is used for treating a variety of cancer including leukaemia, lymphomas, advanced testicular cancer, breast cancer and lung cancer





*Taxus brevifolia* (Pacific Yew)

Taxol is a new anti-cancer drug that is a natural product derived from **the bark of the Pacific Yew tree**. The drug promotes polymerization and stabilization of tubulin to microtubules and interferes with the mitotic spindle.





Milk thistle (*Silybum marianum*) has been used for centuries as a liver tonic and is one of the most well researched herbs in the treatment of liver disease



## Brahmi tonic

As a nervine tonic, Brahmi has been used to help those affected by ageing, memory loss, stroke, and poor circulation in the brain or exhaustion. It may also be of value in assisting those with epilepsy.







Green tea is a type of tea that is made from *Camellia sinensis* leaves and buds that have not undergone the same withering and oxidation process used to make oolong teas and black teas. Green tea originated in China, and since then its production and manufacture has spread to other countries in East and Southeast Asia. Green tea can lowers fasting blood sugar decreases the blood concentration of total cholesterol. However, excessive consumption of green tea extract has been associated with hepatotoxicity and liver failure.





## Ginseng

Both American ginseng (*Panax quinquefolius*, L.) and Asian ginseng (*P. Ginseng*) may boost energy, lower blood sugar and cholesterol levels, reduce stress, promote relaxation, treat diabetes, and manage sexual dysfunction in men.





A dropsy patient



Dropsy: swelling of soft tissues due to the accumulation of excess water.



Wise Villagers



*Digitalis purpurea*  
(Common Foxglove)



William Withering  
(1741 - 1799 )

## Transformation of digitalis from a folk medicine, foxglove to a modern drug, digoxin

In 1785, William Withering reported on his study of digitalis extract used in 163 hospitalized patients.

Pure digitoxin was first isolated from foxglove in 1875.

Digoxin, the glycoside used today, was first isolated in 1957.



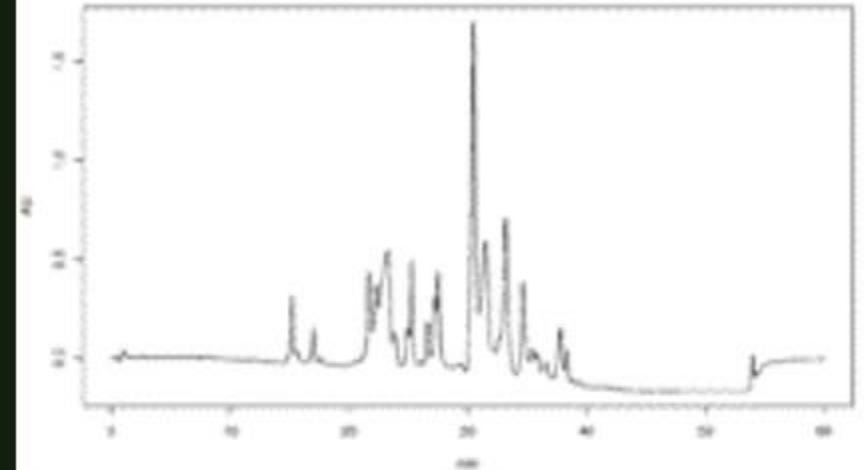
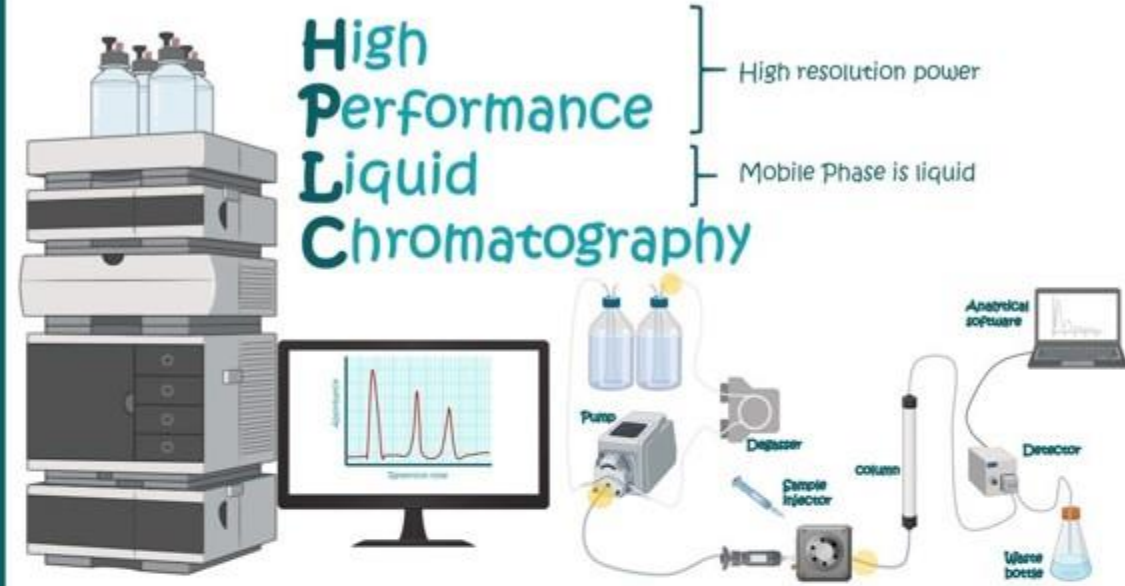
# Well Known Active Principles Derived from Plants

- **Taxol from Pacific Yew**
- **Morphine, codeine from Opium poppy**
- **Quinine from Cinchona Bark**
- **Salicin from Willow Bark known as Aspirin**
- **Atropin from Belladonna**
- **Digoxin from Foxglove**
- **Artemisinin from Artemisia annua L.**
- **Shikimic Acid from Anis seed**

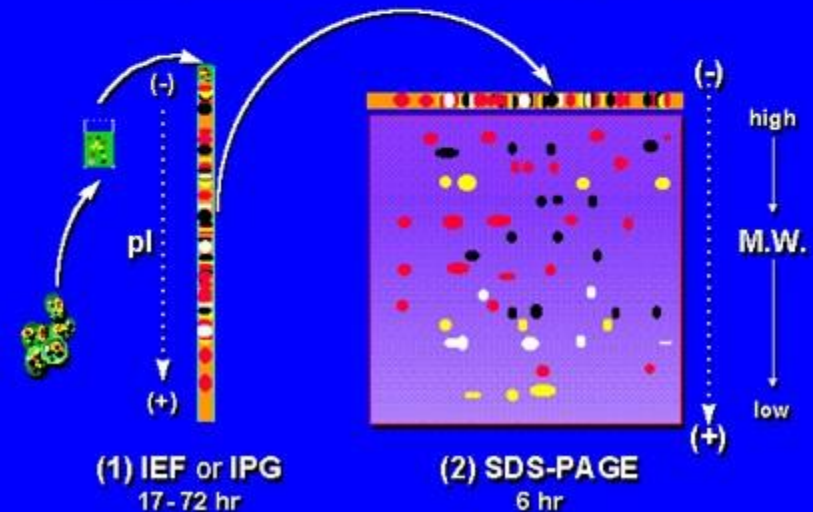




# Extraction of active ingredient from Medicinal plants



## Two Dimensional Electrophoresis





# How I got Interested in Phytomedicine



fifth day. It is the 17th instance of  
“King of Channel”  
Brojen Das ailing  
CALCUTTA, (PTI): Veteran Bangladeshi swimmer Brojen Das, who had created a record of sorts by successfully conquering the English Channel six times, is suffering from throat cancer. Das, who was the first Asian to cross the English Channel in the late 50's, had recently come to Calcutta for treatment and the ailment was detected after investigations in a city hospital. Family sources said that doctors had advised the swimmer to get the treatment done in Mumbai. He will be leaving for the city in a week's time.



- I turned to herbal medicine research after my Father-in-law Mr. Brojen Das was diagnosed with cancer and conventional chemotherapy was not successful
- Tried certain herbal therapy and got benefit
- Moved to Sanjay Gandhi Postgraduate Institute of Medical Sciences, Lucknow in 2000
- Got Lady Tata Memorial Fellowship – genetic studies of gallbladder cancer
- ICMR Fellowship to study various cancer alternative therapy in northern Indian



# Mother Tinchure/Herbal Medicine on Cancer Treatment



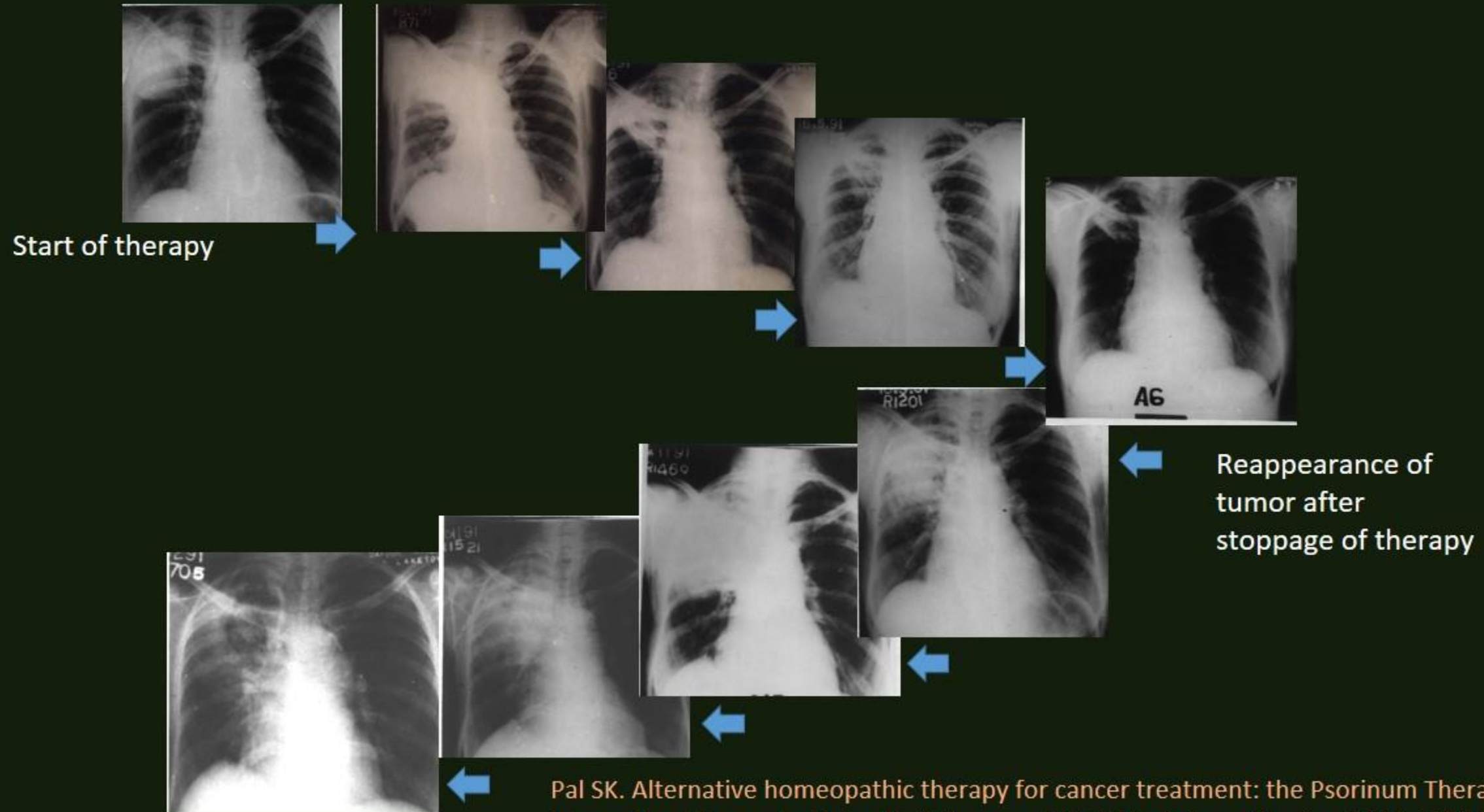
Dr. Ashim Chatterjee



- **Psorinum therapy** is an alternative approach of treating cancer with homeopathic mother tinctures.
- This method of treatment was proposed by Dr. Ashim Chatterjee in Kolkata in the mid 80s.
- Radical cure of cancer was reported in many biopsy confirmed cancer patients. Was a popular therapy, but stopped by Govt. for irregularities.



# Mother Tinchure/Herbal Medicine on Cancer Treatment





# My Interest on Herbal Medicine and Cancer Treatment



- In SGPGIMS, I started my research work on genetic analysis on gallbladder cancer. Getting samples was extremely difficult as most of the patients were too advanced for surgery
- However, few patients did reported to our clinic after 6 months
- They admitted to have taken some herbal therapy



# My Interest on Herbal Medicine and Cancer Treatment



ASIAN PACIFIC JOURNAL OF CANCER PREVENTION



Official publication of the Asian Pacific Organization for Cancer Prevention (APOCP)

*Herbal Medicine: Present and Future*

## MINI-REVIEW

### Herbal Medicine: Current Status and the Future

Sanjoy Kumar Pal<sup>1</sup>, Yogeshwer Shukla<sup>2\*</sup>

#### Abstract

The number of patients seeking alternate and herbal therapy is growing exponentially. Herbal medicines are the synthesis of therapeutic experiences of generations of practicing physicians of indigenous systems of medicine for over hundreds of years. Herbal medicines are now in great demand in the developing world for primary health care not because they are inexpensive but also for better cultural acceptability, better compatibility with the human body and minimal side effects. However, recent findings indicate that all herbal medicines may not be safe as severe consequences are reported for some herbal drugs. Most herbal products on the market today have not been subjected to drug approval process to demonstrate their safety and effectiveness. Thousand years of traditional use can provide us with valuable guidelines to the selection, preparation and application of herbal formulation. To be accepted as viable alternative to modern medicine, the same vigorous method of scientific and clinical validation must be applied to prove the safety and effectiveness of a therapeutical product. In the present review we attempted to describe the present scenario and project the future of herbal medicine.

*Asian Pacific J Cancer Prev*, 4, 281-288

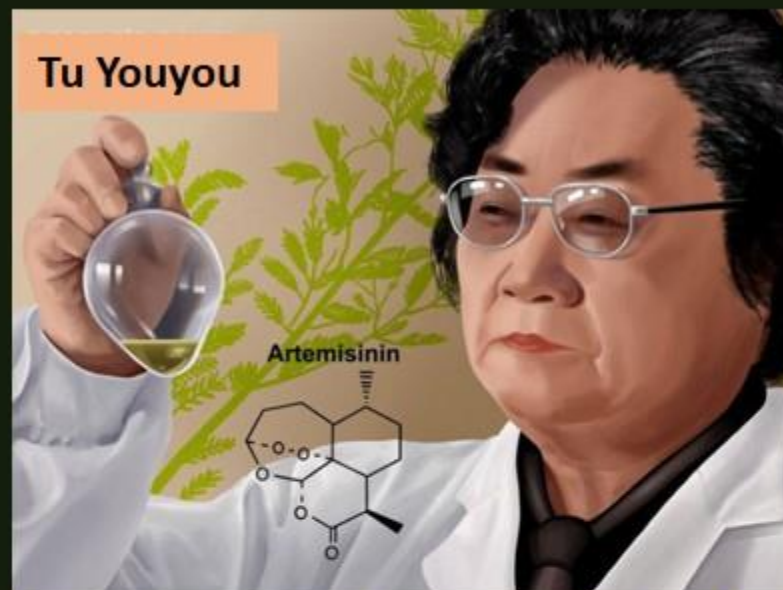
#### Introduction

Herbal medicine is still the mainstay of about 75 - 80% of the world population, mainly in the developing countries, for primary health care (Kamboj, 2000). This is primarily

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prof  
early



↑ 50 K  
ResearchGate



Nobel Prize in Physiology or Medicine (2015)



Artemisia annua



## Herbal Medicine HUMA on Cancer Treatment



Late Dr. S M Atiq



Late Dr. S Hina Fatima

**HUMA is an Poly-herbal Alternative Cancer Therapy tried by patients mostly with advanced malignant disease where conventional therapy is not possible**



## Some important Ayurvedic herb from which HUMA Therapy evolved

## *Azadirachta indica*

*Acacia catechu*

*Asparagus recemosus*

## *Curcuma longa*

*Calotropis procera*

## *Catharanthus roseus*

*Embelica officinalis*

## *Ocimum sanctum*

*Plumbago xylanica*

*Semecarpus anacardium*

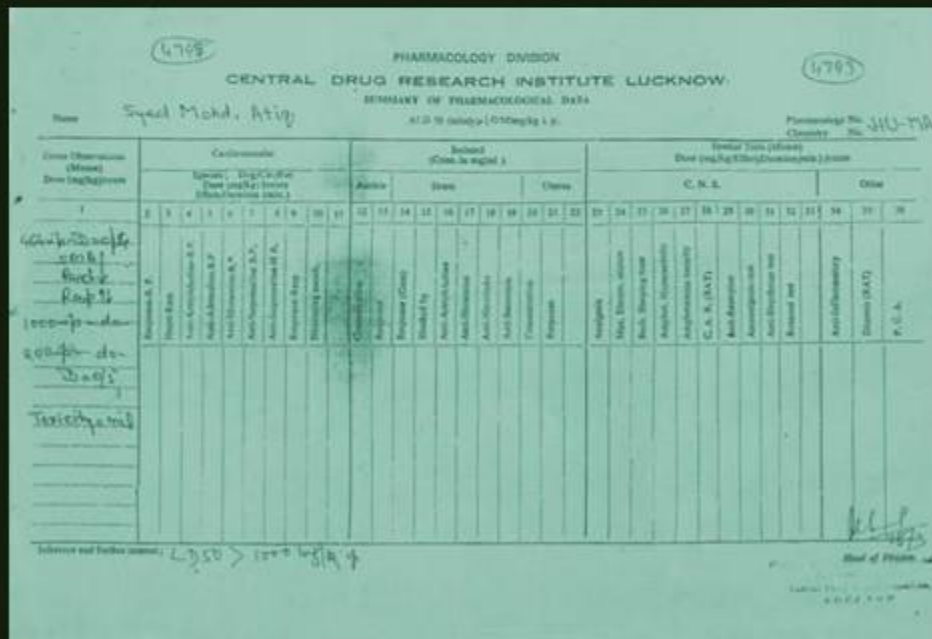
*Tinospora cordifolia*

*Tiliacora racemosa*

*Withania somnifera*



## At presentation



### 6 months after therapy



# Herbs used for Cancer Treatment



*Azadirachta indica*



*Curcuma longa,*



*Tinospora cordifolia*



*Ocimum sanctum*



*Embellica officinalis*



*Semecarpus anacardium*



# Cancer Treatment with Herbal Medicine HUMA



At Presentation



1 month after therapy



6 months after therapy



One year after therapy

## Clinical Details:

Age	: 70 Years
Histology	: Verrucous Carcinoma
Stage	: T <sub>4</sub> N <sub>3</sub> M <sub>x</sub>
Conventional therapy:	Refused because of old age
Response to HUMA	: ++++
Present status	: Stable and Alive
Relapse free survival	: 6 years



# Cancer Treatment with Herbal Medicine HUMA



**A**



**B**



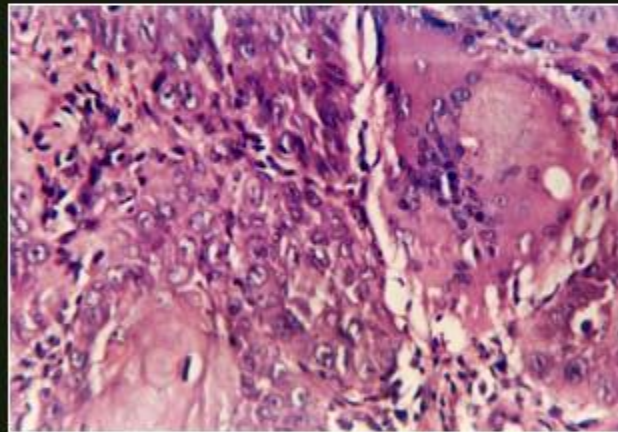
**C**



**D**



**E**



**F**



**G**

**Figure:** A – At presentation; B – 3 months after therapy; C – 6 months after therapy; D – 1 Year after therapy; E – Relapse of disease after stoppage of therapy ; F – Histopathology ; G - 3 months after restart of therapy



# Cancer Treatment with Herbal Medicine HUMA



At Presentation



6 months after therapy



6 months after therapy



9 months after therapy

## Clinical Details

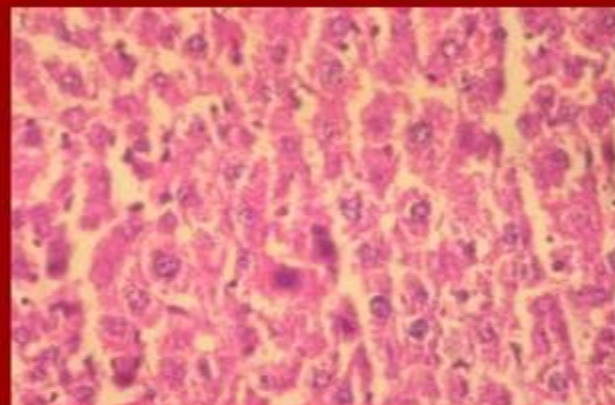
Age	: 32 Years
Histology	: Sq Cell Carcinoma
Stage	: T <sub>4</sub> N <sub>3</sub> M <sub>x</sub>
Conventional therapy	: Nil
Response to HUMA	: +++
Present status	: Dead
Survival	: 12 months



# Sub Acute Toxicity Study in Rats Following OECD Guidelines



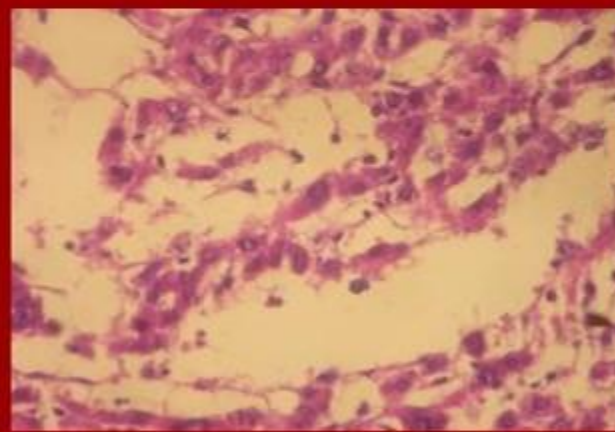
Normal Control



CCl<sub>4</sub> + Liv 52



HUMA



CCl<sub>4</sub>

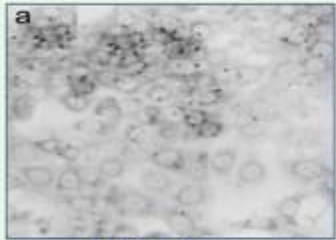


HUMA produced mild toxicity in rats



# Cell line study with HUMA

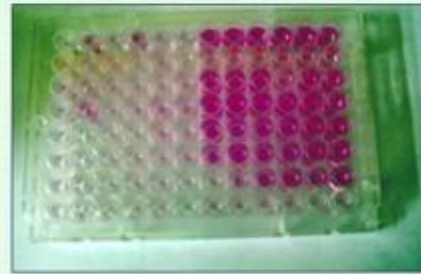
## In Vitro Studies Cyto-toxic Studies of HUMA



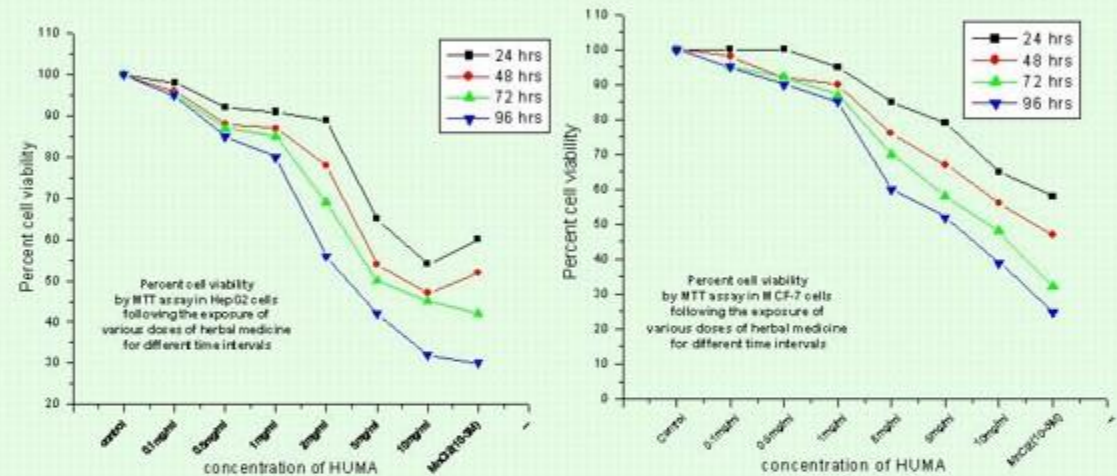
MCF - 7



HepG - 2



The 2 assay that was use were MTT and NRU



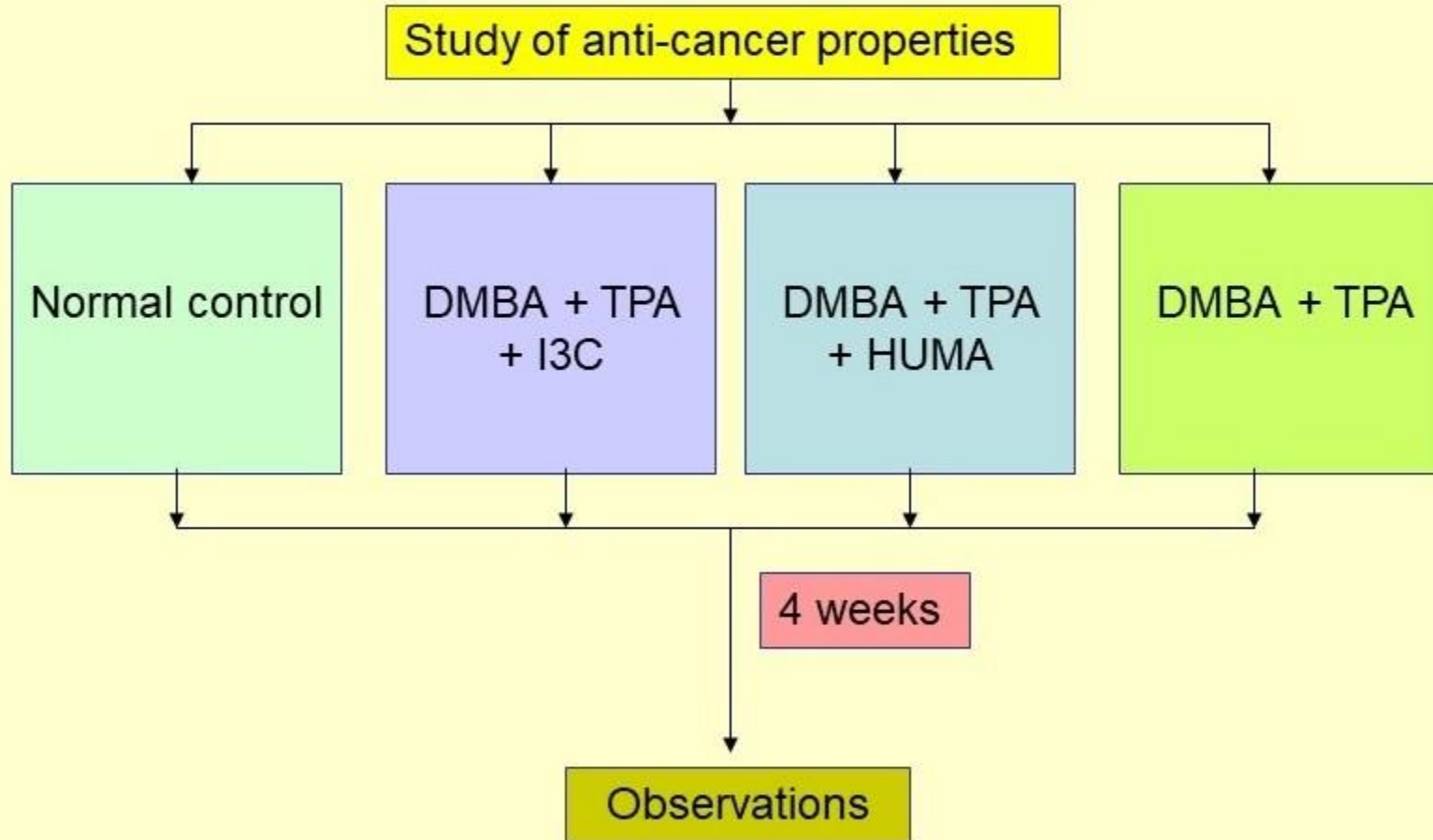
MTT assay on HepG-2 cell line and MCF-7 cell line

The liquid medicine of HUMA was found to be very toxic in cancer cell lines. The study was done at Indian Institute of Toxicology Research, Lucknow.



# Animal Model study with HUMA

## Experimental Design



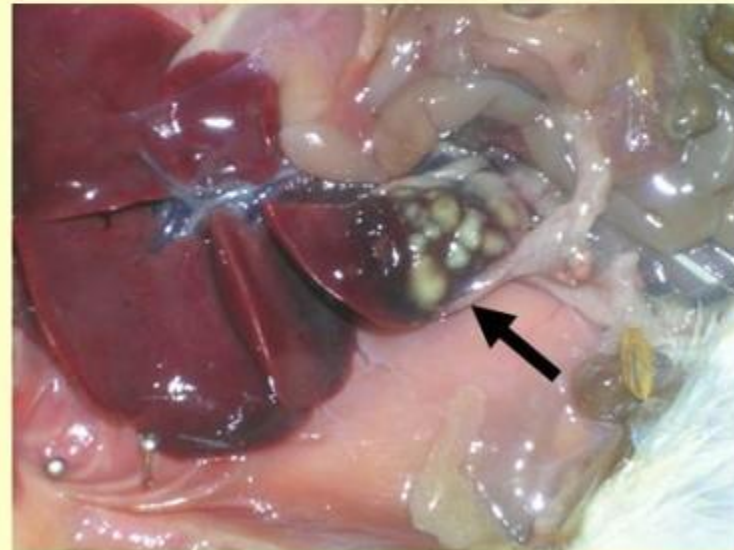
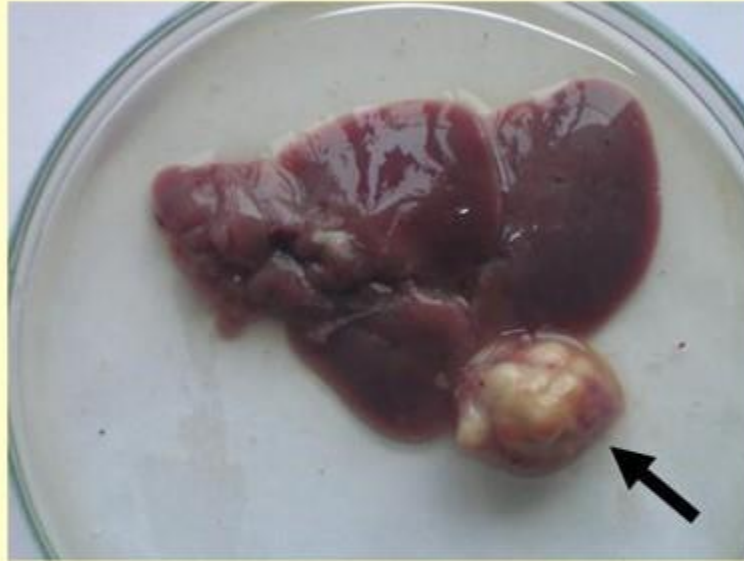
7,12-dimethylbenz[a]anthracene (DMBA)

I3C - Indole-3-carbinol

12-O-tetradecanoylphorbol-13-acetate (TPA)



# Animal Model study with HUMA



All DMBA + TPA treated rats  
developed malignant tumors



# Best Case Series Submission To NCI - NIH

Therapy	No. of Cases	Persuasive	Supportive	Not Studied
Psorinum	25	02	08	15
HUMA	20	03	05	12
Ayurveda*	13	08	02	03

\* Vaidya Balendu's Protocol

- Olaku O, Zia F, Santana JM, White JD. The National Cancer Institute best case series program: a summary of cases of cancer patients treated with unconventional therapies in India. *Integrative Cancer Ther.* 2013; 12(5): 385-92.
- Pal SK. Best Case Series Program: Submission of unconventional therapies from India. *Integrative Cancer Therapies* 2013;12(6): 453.





We were invited to present our research findings' in the NCI's Office of the Cancer Complementary and Alternative Medicine, Bethesda, USA





**THE**

# **TAKE-HOME MESSAGE**

- Many herbal preparations are now safely used as medicine
- Preparations such as HUMA and Psorinum may have a good chemoprotective potential
- Proper design clinical trial can strengthen this claim
- Many conventional drugs have a herbal origin
- More research work are needed in phytomedicine so that good ones are promoted