



Ethnopharmacology

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Introduction

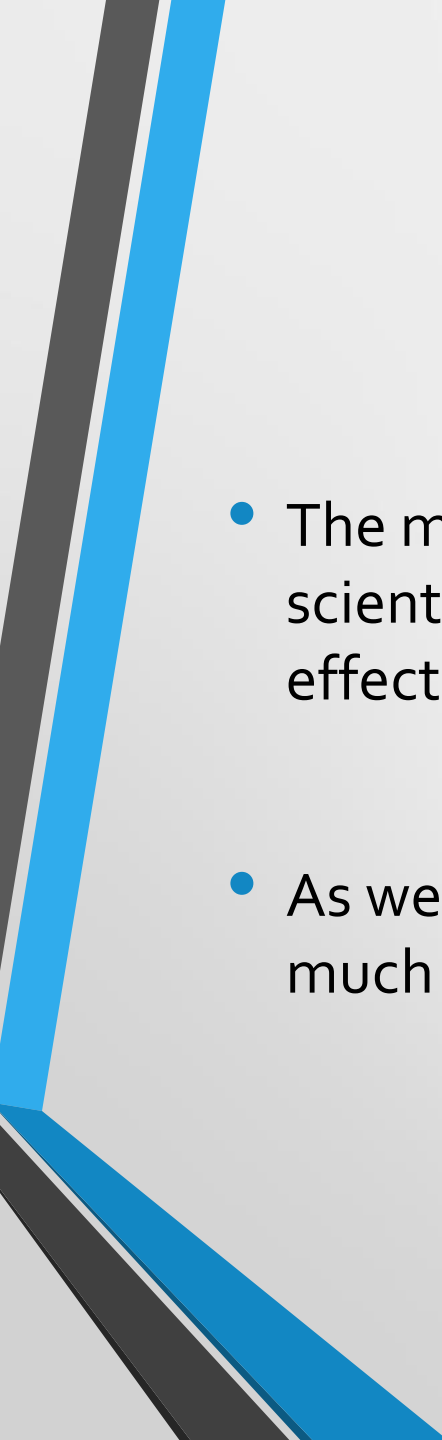
- Ethno-pharmacology can be defined as a multidisciplinary study of biologically active agents used in traditional medicine
- Scientific study correlating ethnic groups, their health and habits and their methodology in creating and using medicines

Age old methods

- Our earliest ancestors chewed on certain herbs to relieve pain
- Wrapped leaves around wounds to improve healing
- The ancient civilizations of the Chinese, Indians and North Africans provide written evidence for the use of natural sources for curing various diseases


Traditional medicine

- Mandrake was prescribed for pain relief
- Turmeric – blood anti-clotting properties
- Raw garlic for circulatory disorders
- Endive plant roots were used for treatment of gall bladder disorders

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- The modern tools of chemistry and biology now allow scientists to detail the exact nature of the biological effects of natural compounds on the human body
 - As well as to uncover possible synergies, which holds much promise for the development of new therapies

Active ingredients

- Friedrich Sertürner isolated morphine from *Papaver somniferum* in 1806
- Atropine - *Atropa belladonna*,
- Strychnine a CNS stimulant,
- Ziconotide from a cone snail,
- Conus magus and Taxol - from the bark of the Pacific yew tree

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- Forty-seven percent of the anticancer drugs in the market come from natural products or natural product mimics

Plants as medicinal source

- Podophyllotoxin a compound obtained from *Podophyllum peltatum*
- Etoposide and teniposide- modified analogs of podophyllotoxin



- *Catharanthus roseus*
- Rich source of indole alkaloids which include the anticancer alkaloids vincristine and vinblastine
- This plant was used for centuries as remedy for diabetes

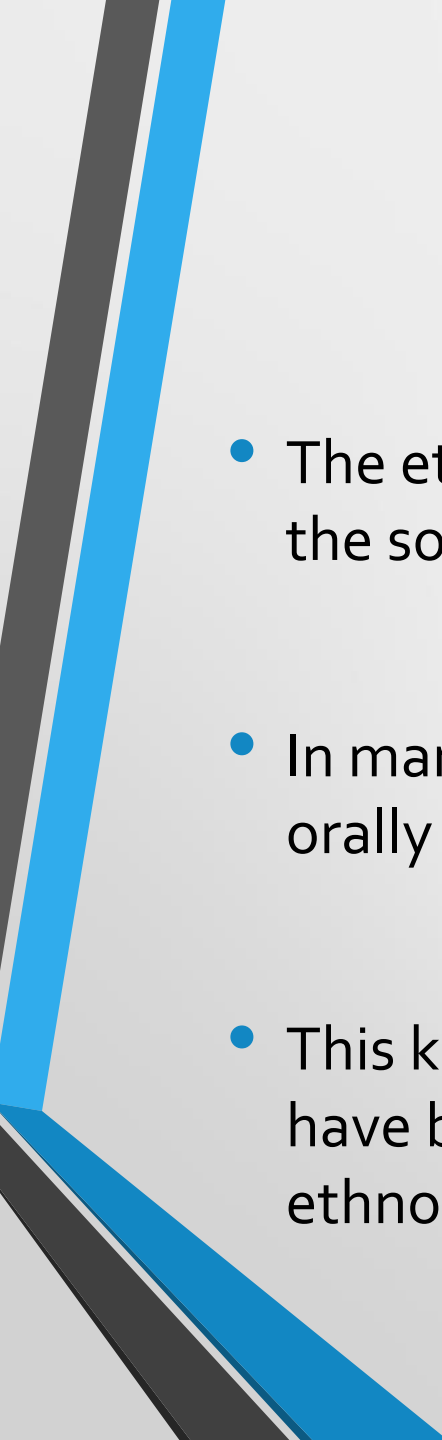



- An extract of the Pacific yew tree,
- *Taxus brevifolia* was discovered
- to possess excellent
- anticancer properties
- Active component, paclitaxel



Drug development

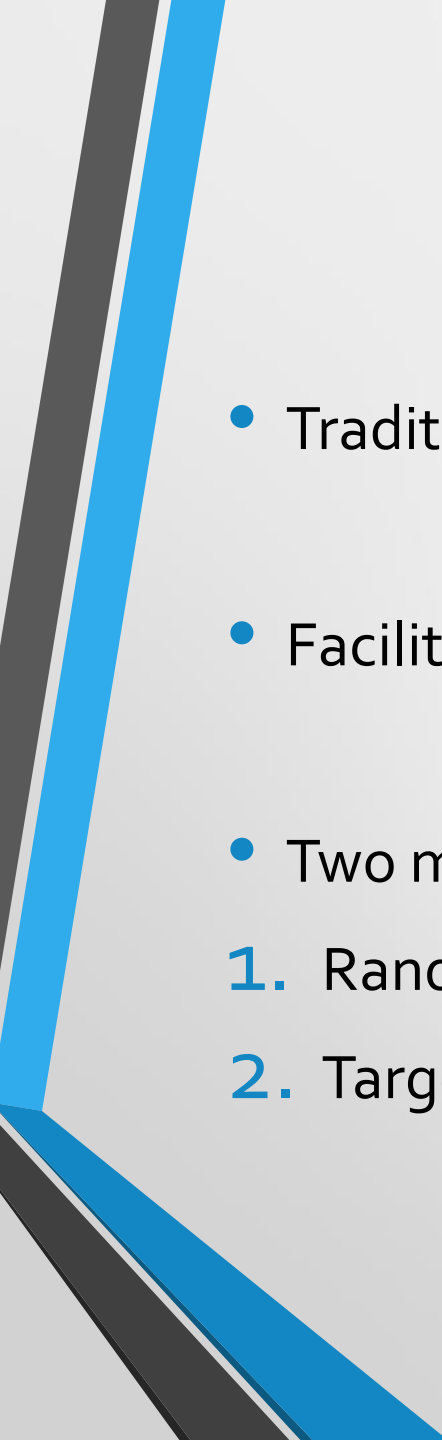
- Challenge to find biologically active compounds and to develop these into new drugs
- Nature as inspiration, as they are a matchless source of novel drug leads
- Rich historical record from ancient physicians about how to use natural medicines - might provide important clues for developing new drugs

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- The ethnopharmacological approach requires input from the social and cultural sciences
 - In many regions of the world, knowledge -passed on orally from one generation of healers to the next
 - This knowledge has been the focus of researchers who have been called ethnobotanists or ethnopharmacologists

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- There are written records from practitioners from cultures such as the Chinese, Indian and European - wrote down their knowledge
 - The earliest known written document is a 4000 year old Sumerian clay tablet that records remedies for various illnesses

Need of resurgence

- Loss of language and traditional knowledge
- Survival of some cultures and ecosystems is endangered
- Knowledge of the use of plants is disappearing fast
- Researchers must accelerate studies in ethnomedicine to develop new drugs

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- Traditional knowledge – search engine
 - Facilitate drug discovery
 - Two methods
 1. Random search
 2. Targeted search

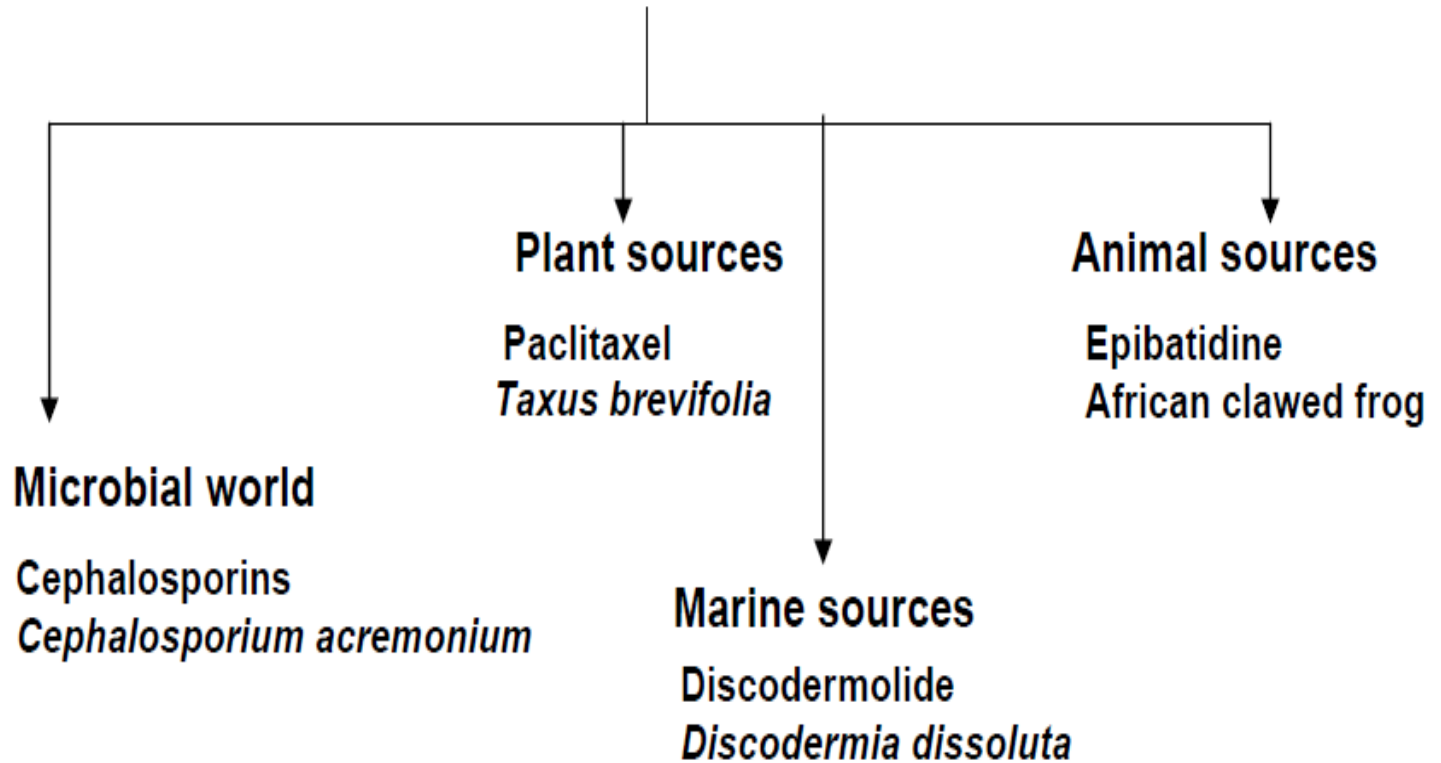
Random search

- Plants from a specific region are screened for medicinal properties
- Does not take into account traditional use or taxonomical status
- Low success rates

Targeted search

- Close relatives of plants known to have medicinal properties are collected and surveyed
- Plants used in traditional medicine – selected for further study

Natural product sources



Conclusion

- Knowledge of traditional medicine is endangered
- Records of ancient methods to use natural medicines must be preserved
- Need for research strategies for studying indigenous medicinal plants

References

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