

جامعة  
المنارة  
MANARA UNIVERSITY



# Natural Products as Sources of New Drugs

Dr. Dima Muhammad

**The 5<sup>th</sup> Scientific Day of the Faculty of Pharmacy**



# Plan

- Natural Products: Present and Future
- Natural Products as Sources of New Drugs
- Current use of Medicinal Plants
- Plant extract market



# Natural Products: Present and Future

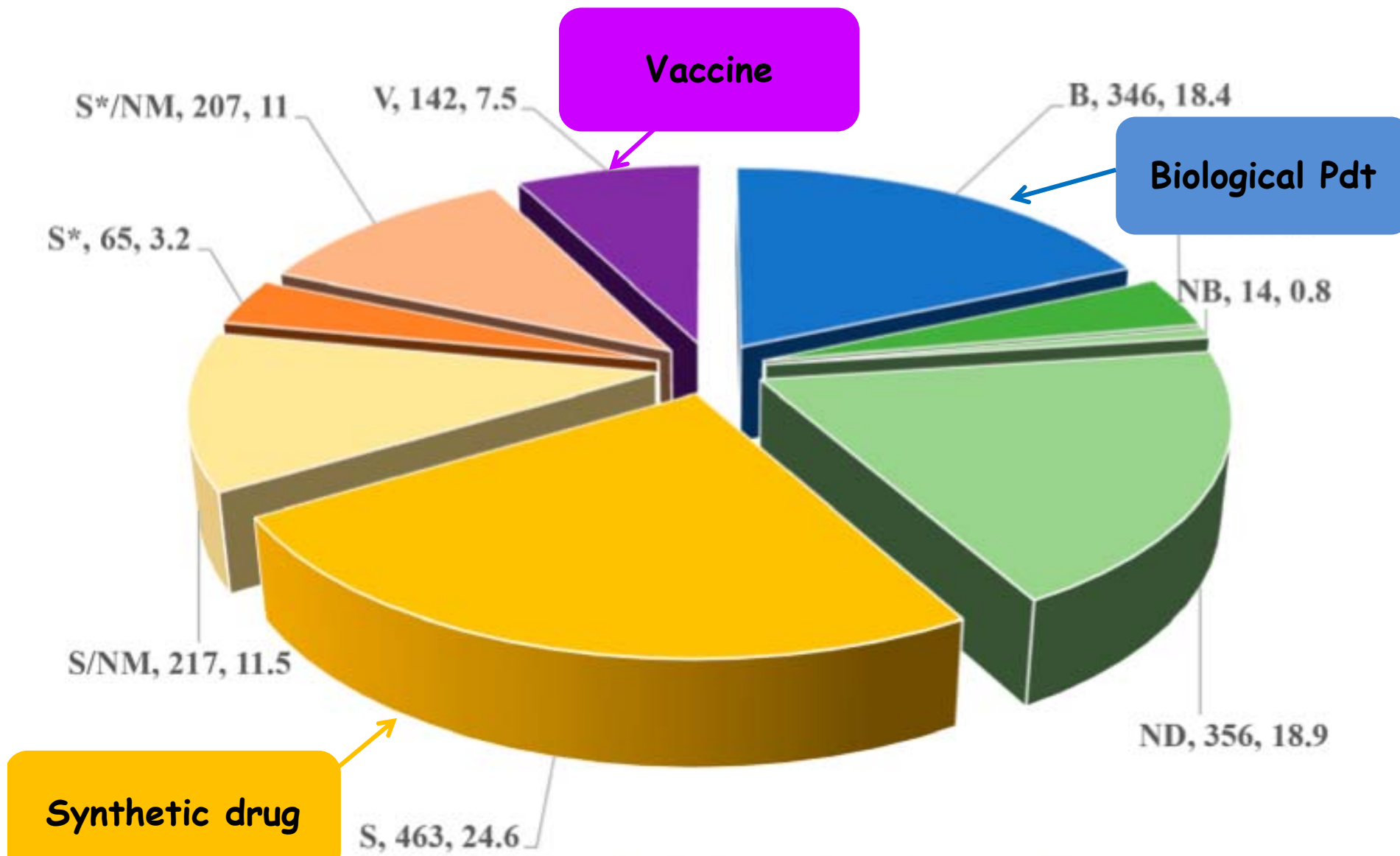
- ❑ Source of therapeutic agents for thousands of years
- ❑ Significant revival of interest in natural products
- ❑ In 2000, 60% of all drugs in clinical trials for the multiplicity of cancers had natural origins.
- ❑ In 2001, eight of the 30 top-selling medicines were natural products or their derivatives.

# Plan

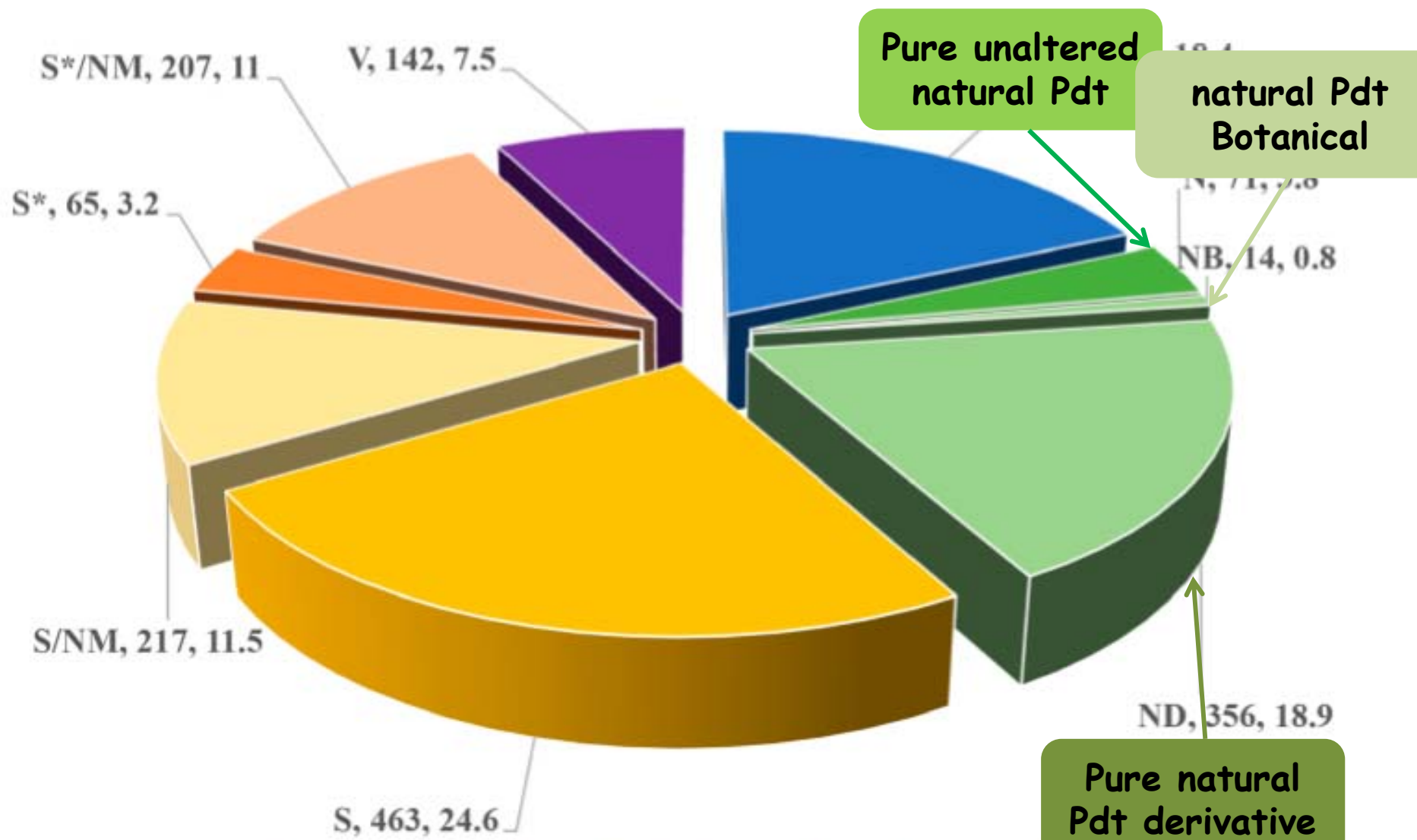
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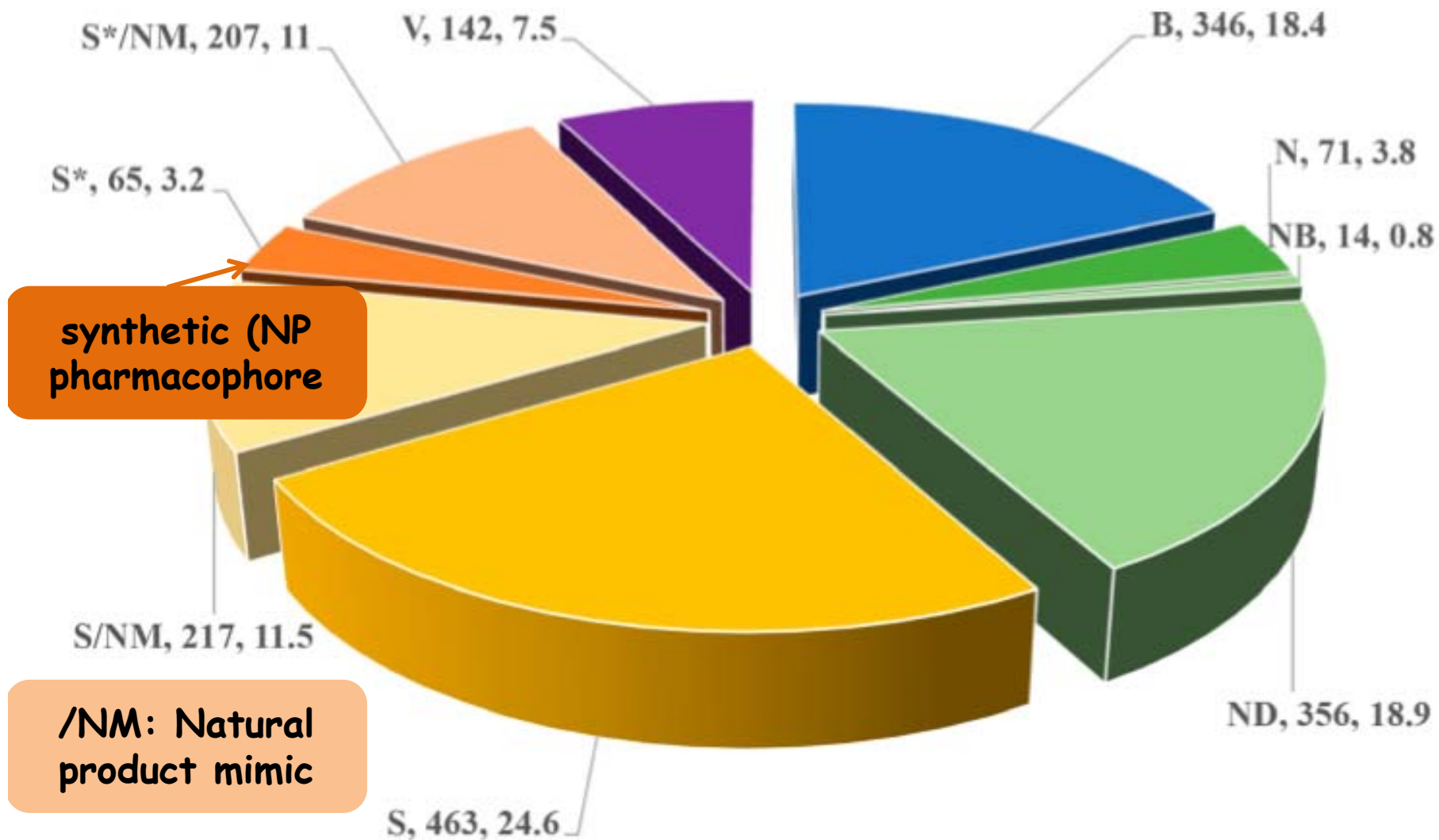
# Natural Products as Sources of New Drugs over the Nearly Four Decades from 01/1981 to 09/2019



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indication	total	B	N	NB	ND	S	S/NM	S*	S*/N
Alzheimer's disease	6	1	1		1		3		
COPD	11	2					3		6
Gaucher's disease	5	3			1				1
PAH	4						3		1
Parkinson's disease	14				1	1	6	1	5
allergic rhinitis	5			1					
analgesic	19		1		2	11	3	2	
anemia (1 sickle cell)	5	1			1	2			1
anesthetic	5					5			
antiallergic	18		1	1	4	12			
antianginal	5					5			
antiarrhythmic	17		1			14			2
antiarthritic	28	8	1	1	4	4	6		4
antiasthmatic	15	2			3	2	6		2
antibacterial	162	4	11		78	36			1
anticancer	247	52	18	1	43	29	36	13	45
anticoagulant	23	5	13				1		3



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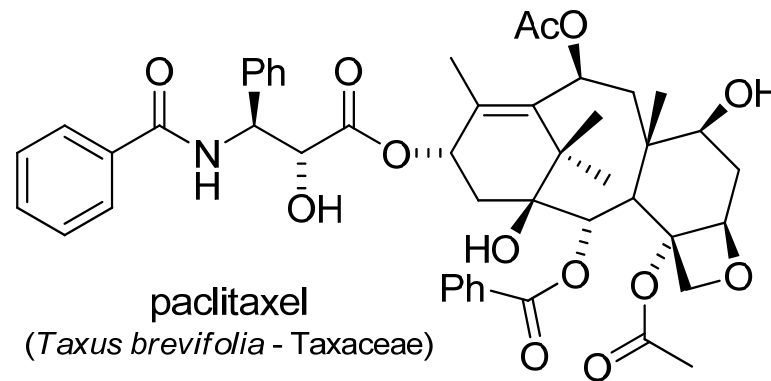
# Current use of Medicinal Plants

## 🌿 Natural form



# Current use of Medicinal Plants

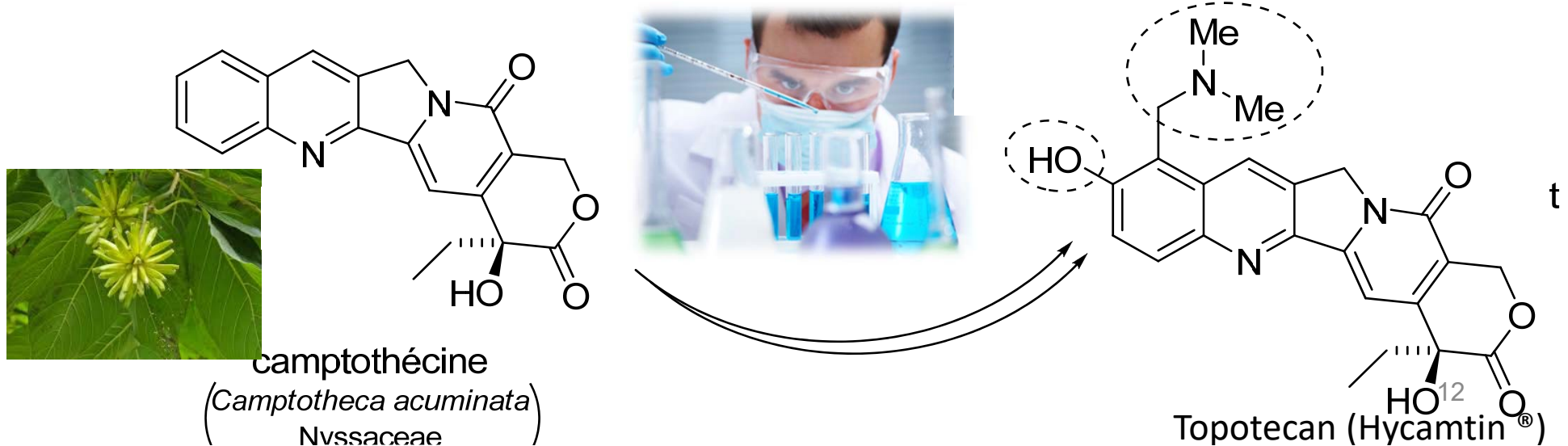
- ❁ Natural form
  - ❁ Sources of bioactive molecules
- "N": Natural product (3.8%)



# Current use of Medicinal Plants

- ✿ Natural form
- ✿ Sources of bioactive molecules
- ✿ **Source of raw materials for hemi-synthesis**

"ND: 18.9%": Derived from a natural product by semisynthetic modification



# Current use of Medicinal Plants

- ✿ Natural form
- ✿ Sources of bioactive molecules
- ✿ Source of raw materials for hemi-synthesis
- ✿ **Galenic forms**

"NB: 0.8% " botanical "defined mixtures = plant extracts" FDA & EMA



# Plan

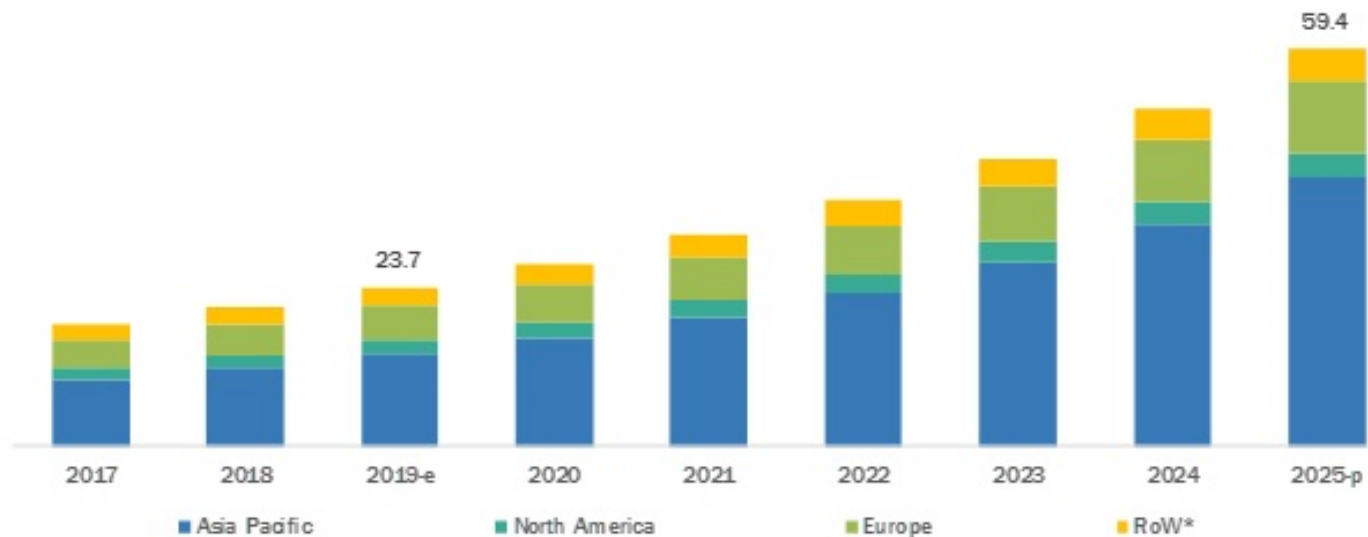
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- **Plant extract market**



# Plant extracts market

- In 2019 : estimated to be valued at USD 23.7 billion
- By 2025: projected to reach USD 59.4 billion

PLANT EXTRACTS MARKET, BY REGION (USD BILLION)



e - Estimated; p - Projected

Published Date: Jul 2019

# plant extracts market

## The major types of plant extracts?

- Phytomedicines & Herbal Extracts
- Essential Oils, Spices, Flavors & Fragrances

Application (Pharmaceuticals & Dietary  
Supplements, Food & Beverages, Cosmetics)





# Plant extracts market

## Key Restraint & Challenges:

- Inadequate supply of raw materials and price fluctuation
- Lack of awareness about the advantages offered by plant extracts
- Availability of substitutes and adulterated products

# Plant extracts market

## Research Proposal:

Preparation of standardized plant extract from local sources!!!!

## Aim:

- Rising awareness about the advantages of pharmaceutical supplements.
- Sustainable Development projects (S & M size)
- Establishing connections with pharmaceutical, cosmetic and food companies