Excipients are defined as 'the substance used as a medium for giving a medicament [1]. The specific application of natural polysaccharide polymers in pharmaceutical formulations include to aid in theprocessing of the drug delivery system during its manufacture, protect, support or enhance stability, bioavailability or patient acceptability, assist in product identification, or enhance any other attribute of the overall safety, effectiveness or delivery of the drug during storage or use.

Natural excipients development is gaining a lot of attention these days. Polymers play a vital role in the drug delivery. So, the selection of polymer plays an important role in drug manufacturing. Some polysaccharides obtained from plants such as carrageen an, alginate, konjac glucomannan, gum arabic, guar gum and locust bean gum have shown excellent potential as carrier materials in matrix type controlled release dosage forms such as micro particles, beads, tablets and cross-linked hydrogels. Excipients that have never been used before must pass formidable regulatory requirements before being incorporated into approved.

PHARMACEUTICAL EXCIPIENT

Pharmaceutical excipients can be defined as nonactive ingredients that are mixed with therapeutically active compound(s) to form medicines.The ingredient which is not an active compound is regarded as an excipients. Excipients affect the behaviour and effectiveness of the drug product more and more functionality and significantly. The variability of active compounds, excipients and process are obvious components for the product variability.

CLASSIFICATION OF EXCIPIENTS

Excipients are commonly classified according to theirapplication and function in the drug products:

Binders, Diluents, Lubricants, Glidants, Disintegrants, Polishing Film formers and coatings agents, Plasticizers, Colorings Suspending agents Preservatives, antioxidants, Flavorings, Sweeteners, Taste improving agents, Printing inks, Dispersing agents Gums

ADVANTAGE OF HERBAL EXCIPIENTS

1) Biodegradable – Naturally occurring polymers produced by all living organisms. They show no adverse effects on the environment or human being.

2) Biocompatible and non-toxic – Chemically, nearly all of these plant materials are carbohydrates in nature and composed ofrepeating monosaccharide units. Hence they are non-toxic.

3) Economic - They are cheaper and their production cost is less than synthetic material. Safe and devoid of side effects – They are from a natural source and hence, safe and without side effects.

4) Easy availability – In many countries, they are produced due to their application in many

DISADVANTAGES OF HERBAL EXCIPIENTS

1) Microbial contamination – During production, they are exposed to external environment andhence, there are chances of microbial contamination.

2) Variation – Synthetic manufacturing is controlled procedure with fixed quantities of ingredients while production of natural polymers is dependent on environment andvarious physical factors.
3) The uncontrolled rate of hydration—Due to differences in the collection of natural materials at different times, as well as differences in region, species, and climate conditions the percentage of chemical constituents present in a given material may vary.
4) Slow Process – As the production rate is depends upon the environment and many otherfactors, it can't be changed. So natural polymers have a slow rate of production.
5) Heavy metal contamination – There are chances of Heavy metal contamination often associated with herbal excipients

Sr. No.	Name of Excipients	Source	Category / Uses
1	Agar	Gelidium amansii	Laxative, Suspending agent, emulsifying agent, gelling agent in suppositories, surgical lubricant, tablet disintegrates, medium for bacterial culture
2	Gum Ghatti	Anogeissus latifolia (Combretaceae)	Binder, emulsifier, suspending agent
3	Gum Tragacanth	Astragalus gummifer (Leguminosae)	Thickening agent, demulcent, Suspending agent, emulsifying agent, emollient in cosmetics and sustained release agent
4	Aloe mucilage	Aloe species (Liliaceae)	Gelling agent, sustained release agent
5	Bavchi mucilage	Ocimum canum (Gigarginaceae)	Suspending agent, emulsifying agent
6	Cassia tora	Cassia tora Linn (Leguminoseae)	Binding agent
7	Gum acacia	Acacia arabica (Combretaceae)	Suspending agent, emulsifying agent, binder in tablets, demulcent and emollient in cosmetics
8	Khaya gum	Khaya grandifolia (Labiatae)	Binding agent
9	Satavari mucilage	Asparagus racemosus (Aapocynaceae)	Binding agent and sustaining agent in Tablet
10	Albizia gum	Albizia zygia (Leguminoseae)	Binder agent
11	Tamarind seed	Tamarindus indica (Leguminoseae)	Binding agent, emulsifier,

PHARMACEUTICAL APPLICATION OF HERBAL EXCIPIENTS

Tamarind Gum:

Tamarind xyloglucan is obtained from the endosperm of the seed of the tamarind tree, Tamarindus indica, a member of the 21 evergreen families. Tamarind Gum, also known as Tamarind KernelPowder (TKP) is extracted from the seeds Microspheres formed was in the size range of 230 - 460µm. In another study Diclofenac sodium matrix tablets containing TSP was investigated. The tablets prepared by wet granulation technique were evaluated for its drug release Characteristics.

Guar Gum:

Guar gum comes from the endosperm of the seed of the legume plant Cyamopsis tetragonolobus. Refinedguar splits are obtained when the fine layer of fibrous material, which forms the husk, is removed and separated from the endosperm halves by polishing.Strong acids cause hydrolysis and loss of viscosity, and alkalies in strong concentration also tend to reduceviscosity. It is insoluble in most hydrocarbon solvents

Khaya gum:

Khaya gum is a polysaccharide obtained from the incised trunk of the tree Khaya grandifoliola (family Meliaceae). The fact that the gum is naturally available, inexpensive and non-toxic has also fostered the interest in developing the gum for pharmaceutical use. Further work has also shown its potential as a directly compressible matrix system in the formulation of 61 controlled release tablets.

Aloe mucilage:

It is obtained from the leaves of Aloe barbadensis Miller. The aloe parenchyma tissue or pulp has been shown to contain proteins, lipids, amino acids, vitamins, enzymes, inorganic compounds and small organic compounds in addition to the different carbohydrates. Many investigators have identified partially acetylated mannan (or acemannan) as the primary polysaccharide of the gel, while others foundpectic substance as the primary polysaccharid

Pectin:

Pectins are non-starch, linear polysaccharidesextracted from the plant cell walls. In the food industry, folic acid incorporated microcapsules were prepared using alginate and combinations of alginate and pectin polymers so as to improve stability of folic acid. The blended alginate and pectin polymer matrix increased the folic acid encapsulation efficiency and reduced leakage from the capsules as compared to those made with alginate alone; they showed higher folic acid retention after freeze drying and storage [36].

Alginates:

Alginates are natural polysaccharide polymers isolated from the brown sea weed (Phaeophyceae). Alginic acid can be converted into its salts, of which sodium alginate is the major form currently used.Alginates offer various applications in drug de-livery, such as in matrix type alginate gel beads, in liposomes, in modulating gastrointestinal transit time, for local applications and to deliver the bio molecules in tissueengineering applications.