Assignment I

Name: V. GOWSALYA

Course: B.PHARM VI - SEMESTER

Subject: HERBAL DRUG TECHNOLOGY

Topic: BIODYNAMIC AGRICULTURE

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BIODYNAMIC AGRICULTURE

Introduction:

Biodynamic farming was introduced by Rudolf steiner and develop in popularity in since 1922.

In 1924, the bio dynamic movement went under way from lectures given by Rudolf steiner in Koberwitz, poland.

Biodynamic farming is a method of organic agriculture that considers farm as a living system where one activity is affected by the other.

The term biodynamic has been derived from the greek term bios meaning life and dynamic meaning energy. Hence, biodynamic farming indicates working with energies that create & maintain life.

Principles of Biodynamics:

Biodynamic is economically oriented on a wider scope and includes sun, moon, planets, subterranean features and mental factors.

All natural things of the world are formed by the transformation & intimate combination of four elements that include fire, earth, water, air.

1) Harvesting cosmic forces:

cosmic and earthly forces influences plant growth. moon, mercury and venus influe the earth from above, while mars, jupiter & saturn energize from below.

2) Biodynamic calendar:

If agricultural practices are performed as per constellation, they prove to be more effective and beneficial as each constellation has dominant elemental effects.

3> Biodynamic farming:

Restores the humus status of soil ecosystem to retain its fertility & productivity.

Characteristics:

It consists of two characteristics.

* Firstly, it allows inputs from various herbal, mineral & manual raw material to be processed in complex ways and applied in small doses on soil and crops.

* secondly, it observes rhythms in nature that go beyond the influences of sun, weather and season but include lunar, planetary & stellar.

Biodynamic preparation:

To aid fertilization, steiner recommended the use of eight preparation are discussed below

1) Field preparation.

2) compost preparation.

1) Field preparation :

To make 500 Horn manure, cow manure is packed into the horns of 9 cows. The horns are then buried 46 - 69cm deep in fertile soil during autumn and left there to decompose over the winter. The horns are dug up in spring (march - April) during the descending moon phase.

Afterwood, they are stored in cool earthen pots. This process is believed to help the manure absorp life energy from the earth, promoting the formulation of humus.

2) compost preparation :

composting is the process of combining organic materials to make a high - quality nature fertilizer.

1) yarrow preparation SO_2:

yarrow flowers are placed inside the bladder of a red deer. the bladder is then left in the sun during summer and buried in the earth during winter.

2) chamomile flowers preparation SO_3:

chamomile flowers are placed inside the small intestine of cattle. the intestine is buried in nutrient-rich soil autumn and dug up in spring. this helps improve plant health.

3) stinging Nettle preparation SO_4:

Fully bloomed stinging nettle plants are packed under ground and surrounded by peat for a year. this helps to improve the soil and promote plant growth.

Lunar Effect on plant growth:

steiner

steiner suggested that the moon's light and gravitational pull influence plant growth. the moon

has an elliptical orbit, so its gravity changes during 28-day cycle.

When the moon is farther away, root growth improves due to weaker gravity. The moon's gravity also cause ocean tides. For planting its best to sow flower, fruit and vegetable seeds two days before the new moon, as the light and gravity are favourable for growth in the next week.

During the week leading up to the full moon, the moon's light increases, which boosts leaf growth, but stronger gravity makes it harder for roots to grow.

The weaker gravity helps roots develop, making it a good time to transplant seedlings since their roots are in better conditions to flowish.

The different phases of lunar cycle are

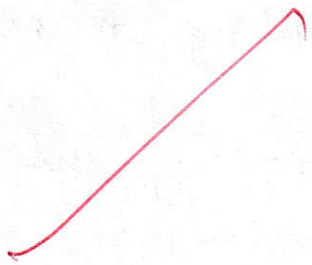
1) Ascending period.

During this period, a greater emphasis is laid on the energy flow from the centre of the earth to the cosmic periphery. This phenomenon is observed in spring tides. and has a corresponding to strength the sap flow in a plant that can be harnessed by the gardener.

The earth is breathing out ; upper parts of the plants Eg : shoots, undergo development

cosmic energy work above rhizosphere

spring and summer seasons.



2, Descending period :

During this period, lunar energy flows down from the cosmic periphery towards the centre of the earth. These forces work more strongly on the plant parts in the soil.

The earth is breathing in : ground parts of the plant : eg : roots, undergo development

cosmic energy works below the rhizosphere

Autumn and winter seasons.

suitable for root development, transplanting, manure application and harvesting of tuber crops.

GOOD AGRICULTURE PRACTICES.

GAP

Producing good wholesomes agriculture products ensuring food and environment safety

Farmers should adapt techniques which satisfy the above and fetch a good price for their produce in the market

Process start from soil to retail market of the product.

Definition:

GAP are "collection of principles to apply for on-farm producing & post production process, resulting in safe and healthy food and non-food agricultured products, while taking into account economic, social & environmental sustainability".

Benefits of GAP:

Promotes sustainable agriculture.

Meeting national & international environment standards in farm produce.

Helps improve the safety and quality of food and other agricultural products.

Better implementation of the food regulations in india

checking out residual toxicity in india from better food quality & safety improvement.

Encouraging culture of food safety

Better price realization of the product.

Secure and strengthen livelihoods of the small of the and marginal farmer.

systematic scientific business approach to enable professionalism in farming.

GAP includes :

Water

A) Agriculture

B) Processing

Manure, compost & other similar fertilizers

sanitary Facility.

Field sanitation

Packing Facility sanitation

Transportation

Trace back

Europe GAP, initates in 1997, by European Retailers and other members of input & services side of Agriculture

First version released in Europe in 200 Y.

Europ GAP standard is designed to reassure Consumers.

Assignment II

Name :- V. GOWSALYA

Course: B. PHARM VI - SEMESTER

Subject: HERBAL DRUG TECHNOLOGY

Topic : HERBAL EXCIPIENTS

8

HERBAL EXCIPIENTS.

Introduction :

Excipients can be defined as non active ingredients that are mixture of therapeutically active compounds to form medicines. The excipients are substance which are used as a medium for giving a medicament.

These help in processing of the drug delivery system during its manufacture, protect, support or enhance stability, bioavailability or patient acceptability.

Classification of Excipients.

colorants	-	Henna, indigo, caramel, chorophyll
sweeteners	-	Glychyrrhiza, honey, stevia
Binding Agents	-	Acacia, gelatin, tragacanth, starch
viscosity enhancer	-	Pectin, tragacanth, cellulose
Diluents.	-	Lactose, starch, mannitol, sucrose

Disintegrating agents - starch, isapgol husk, CMC

Ointment bases - Lanolin, beeswax

Emulsifying agent - Acacia, agar, guar gum

Flavoring agents - cardamom, vanilla, lemon oil,

Perfumes - Rose, lavender, sandalwood.

Advantage:

Eco friendly

Cost effective

Easy availability

safe and without side effects

Biocompatible and non-toxic.

Disadvantage:

Microbial contamination

Heavy metal contamination

slow process

Uneven rate of hydration

Variation.

COLORANTS AND COLORING AGENTS.

* colorants are natural dyes which are obtained from plants, animals,.

* The common colorants obtained from vegetable dyes derived from plant source like roots, barks, leaves, wood and other biological sources like fungi and lichens.

* synthetic colorants are produced in lab and are not found in nature.

* colourants from natural sources are proved to be safe due to their non-carcinogenic, non-toxic and biodegradable nature.

* These are several active constituents in plants act as a colorants like different color pigments such as anthocyanins, carotenoids, betalains.

Ideal properties of natural colouring agents.

* Non toxic and have no physiological activity.
* Free from harmful impurities
* Coloring power should be high so that only small quantities are required.
* Unaffected by light, tropical temperature, hydrolysis.
* compatible with medicaments and not interfere with them

Example :

Turmeric	Dried rhizomes of plant curcuma longa Linn, zingiberaceae	curcuminoids - curcumin.
safflower	Carthamus tinctoria L., Asteraceae	carthamin and carthamidin.

SWEETNERS

* sweeteners are used to improve palatability and shelf life of food product.

* Impart sweet taste to the formulations.

* They don't contribute to the weight gain, don't cause cavities and don't raise blood sugar levels

* sweetness reduces or masks bitterness, sourness and saltiness.

Ideal properties.

* Effective in small conc.
* stable at wide range of temperature
* prolong use of these agents should not Produce any carcinogenic effects.
* Low or no calorific value.
* compatible with other ingredients in formulation.

Example :

Bitter orange	Fruits of citrus aurantium, (Rutaceae)	Neohesperidin 330 time more sweet than sucrose
Abrus Precatorius Indian liquorice	Leaves of abrus Precatorius (Leguminosae)	Glycyrrhizin.

BINDERS

Binders are the excipients, the dry powders or liquid, which is used to bind hold all ingredients used in formulation of dosage form.

Binders are mixed in formulation to convey Plasticity or to increase the bonding strength between the particles in formulation.

Types of binders.

1) On the basis of their source.

i) Natural polymers: starch, gelatin, gums

ii) synthetic polymers: PVC, HPMC, MC

iii) sugar: sorbitol, Glucose.

2) On the basis of their application.

i) solution binders: gelatin, cellulose, PEG

ii) Dry binders: Methyl cellulose.

Advantages

Have low toxicity

Biodegradable

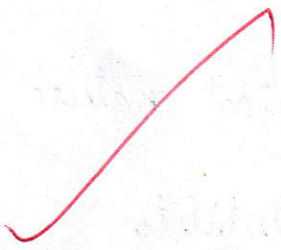
Easily available

Low cost

Enhance stability.

Ex:

Tragacanth — Root of astragalus gummifera — Family - papilionaceae



Tragacanthin.

DILUENTS

Diluents are those excipients which are used to enhance the bulk of any formulation or to dilute any liquid formulation.

Major function of diluents / fillers is that, they provide a structural from and fill the size of dosage form and make them suitable for administration by enhancing the bulk volume.

It is used to improved cohesion, enhance the flow and adjust the weight of the tablet as per die cavity.

Types:

chemical nature - organic materials - carbohydrates
Inorganic - Dibasic calcium phosphate

solubility - water soluble - sucrose, mannitol.
water insoluble - starch, powdered cellulose.

Example :

Mannitol saccharine exudation from stem of fraxinus ornus, Oleaceae — sugar alcohol

VISCOSITY ENHANCER

A thickening agent is a substance which can increase the viscosity of a liquid without substantially changing its property.

A viscosity modifier can decrease the thickness of a liquid to improve pour ability and ultimately make it more palatable.

some thickening agents may also function as stabilizers when they are used to maintain the stability of emulsion.

Types :

Natural Thickeners - cellulose - HEC used in shamp
or body wash

Mineral thickeners - Bentonite . Mg silica and
alumium silicate.

Advantages :

1) Inhibit the crystal growth

2) Enhances the physical stability.

Disadvantages

1) Hinders redispersibility of the sediment

2) Retards the absorption of the drug

3) creates problem in handling of the materia
during manufacturing.

Example :

Xanthum gum — Natural gum derived as an excretion product from bacteria, xanthomonadaceae — used 6/w 0.1-
composed of p
polysaccharide

DISINTEGRANTS :

Disintegrating agents accelerate the swelling or disintegration of tablet comes in contact with a fluid.

Disintegrates are added to the formulation as it breaks the dosage form into smaller particles when it comes in contact with the liquid, smaller fragments have greater surface area which will increase the dissolution of the drug = Eg - starch.

Characteristics :

* Poor solubility.
* Poor gel formation
* Good hydration capacity
* Good compressibility and flow property
* No tendency to form complexes with the drug.

FLAVORS

Flavors can be used to mask unpleasant taste active ingredients and improve the acceptance that the patient will complete a course of medication

FDA defines a natural flavor as the " the essential oil, oleoresin, essence or extractive protein hydrolysate, distillate or any product of roasting, heating or enzymolysis, which contain the flavouring constituents derived from spice, fruit or fruit juice or vegetable juice, herb, barks etc..

Examples:

Orange oil	It is obtained from fruits of citrus sinesis, L. Rutaceae	α-piene, β-piene, sabinene, myrcene.

Assignment - I

Name : A. Anbu Selvi,

Course : B. Pharm VI - Semester,

Subject : Herbal Drug Technology,

Topic : Biodynamic Agriculture.

8

BIODYNAMIC AGRICULTURE

Introduction:

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→ In 1924, the biodynamic movement went under way from lectures given by Rudolf Steiner in Koberwitz, Poland.

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Cosmic & earthly forces influences plant growth: moon, mercury & venus infuse the earth from above, while mars, jupiter & saturn energy from below.

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If agricultural practices are performed as per constellation, it they prove to be more effective and beneficial as each constellation has dominant elemental effects.

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Characteristics:

It consists of two characteristics,

* Firstly, it allows inputs from various herbal, mineral & manual raw material to be processed in complex ways & applied in small doses on soil and crops.

* Secondly, it observes rhythms in nature that go beyond the influences of sun, weather & season but include lunar, planetary & stellar.

Biodynamic preparation:

To aid fertilization, steiner recommended the use of eight preparation are discussed below:

1) Field preparation
2) Compost preparation

1) Field preparation:

To make 500 horn manure, cow manure is packed into the horns of a cows.

The horns are then buried 46-49 cm deep in

fertile soil during autumn and left there to decompose over the winter. The horns are dug up in spring (march - April). during the descending moon phase.

2) Compost preparation:

Composting is the process of combining organic materials to make a high-quality natural fertilizer

1) Yarrow preparation 502:

Yarrow flowers are placed inside the bladder of a red deer. The bladder is then left in the sun during summer & buried in the earth during winter.

2) Chamomile preparation 503:

Chamomile flowers are placed inside the small intestine of cattle. The intestine is buried in nutrient-rich soil in autumn and dug up in spring. This helps improve plant health.

Lunar effect on plant growth:

Steiner:

↳ Steiner suggested that the moon's light and gravitational pull influence plant growth. The moon has an elliptical orbit, so its gravity changes during 28-day cycle.

↳ When the moon is further away, root growth improves due to weaker gravity. The moon's gravity also cause ocean tides. For planting its best to sow flower, fruit & vegetable seeds two days before the new moon, as the light and gravity are favorable for growth in the next week.

↳ The weaker gravity helps roots develop, making it a good time to transplant seedlings, since their roots are in better conditions to flourish.

↳ As a result, foliage as well as the roots rest in the sun upto the new moon of the next lunar cycle.

→ Cosmic energy works above the atmosphere.

→ Autumn and winter seasons.

→ Suitable for root development, transplanting, manure application and harvesting of tuber crops.

GOOD AGRICULTURE PRACTICES.

GAP:

→ Producing good wholesomes agriculture products ensuring food and environment safety.

→ Farmers should adapt techniques which satisfy the above and fetch a good price for this produce in the market.

→ Process start from soil to retail market of the produce.

Definition:

GAP are "collection of principles to apply for on-farm producing & post production process, resulting in safe and healthy food and

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Benefits of VAP:

→ Promotes sustainable agriculture.

→ meeting national & international environment standards in farm produce.

→ Helps improve the safety and quality of food and other agricultural products.

→ Better implementation of the food regulations in India.

→ Secure and strengthen livelihoods of the small & the and marginal farmer

→ Systematic scientific business approach to enable professionalism in farming.

GAP includes ;

water.

A) Agriculture

B) Processing.

- Manure, compost & other similar fertilizers sanitary facility.
- Field sanitation.
- Packing facility sanitation
- Transportation
- Trace back.

Eurep GAP, initates in 1997, by european retailers and other members of input & services side of agriculture.

First version released in europe in 2001.

Europe GAP standard is designed to reassure consumers.

Assignment - II

Name : S. Anbu Selvi,

Course : B. Pharm VI - Semester,

Subject : Herbal Drug Technology,

Topic : Herbal excipients.

HERBAL EXCIPIENTS

roduction:

* Excipients can be defined as non active gredients that are mixture of therapeutically ive compounds to form medicines. The excipients re substance which are used as a medium for oing a medicament.
* These help in processing of the drug delivery stem during its manufacture, protect, support or hance stability, bioavailability or patient acceptability.

ssification of excipients:

Colorants - Henna, indigo, caramel, chlorophyll.

Sweeteners - glychyrrhiza, honey, stevia

Binding agents - Acacia, gelatin, tragacanth, starch

Viscosity enhance - pectin, tragacanth, cellulose

Diluents - lactose
starch
mannitol
sucrose.

Disintegrating agents - starch, isapgol husk, CMC.

Ointment bases - lanolin, beeswax

Emulsifying agent - acacia, agar, guar gum.

Flavoring agents - Cardamom, vanilla, lemon oil.

perfumes - Rose, lavender, sandal wood.

Advantage:

Eco friendly
Cost effective
Easy & availability
Safe and without side effects
Biocompatible and non-toxic.

Disadvantage:

Microbial contamination
Heavy metal contamination
Slow process
Uneven rate of hydration
variation.

Colorants and coloring agents:

* Colorants are natural dyes which are obtained from plants, animals.

* The common colorants obtained from vegetable dyes derived from plant source like roots, barks, leaves, woods and other biological sources like fungi and lichens.

* Synthetic colorants are produced in lab and are not found in nature.

* Colourants from natural sources are proved to be safe due to their non-carcinogenic, non-toxic and biodegradable nature.

* There are several active constituents in plants acts as a colorants like different color pigments such as anthocyanins, carotenoids, betalains.

Ideal properties of natural colouring agents:

* Non toxic and have no physiological activity.
* Free from harmful impurities.
* Colouring power should be high so that only small quantities are required.
* Unaffected by light, tropical temperature, hydrolysis.
* Compatible with medicaments and not interfere with them.

Example:

Turmeric	Dried rhizomes of plant curcuma longa linn, zingiberaceae.	Curcuminoids curcumin.
Sunflower.	Calthaxanthus tinctoria L., asteraceae.	Carthamin and carthamidin.

Sweeteners:

* Sweeteners are used to improve palatability and shelf life of food product.

* Impart sweet taste to the formulations.

* They don't contribute to the weight gain, don't cause cavities and don't raise blood sugar levels.

* Sweeteners reduces or masks bitterness, sourness and saltiness.

Ideal properties:

* effective in small conc.

* stable at wide range of temperature.

* Prolong use of these agents should not produce any carcinogenic effects.

* Low or no calorific value.

* Compatible with other ingredients in formulation.

Bitter orange	Fruits of citrus aurantium (Rutaceae)	Neohesperidin 330 times more sweet than sucrose.
Abrus Precatorium Indian liquorice	Leaves of abrus precatorius (Leguminosae)	Glycyrrhizin

Binders:

Binders are the excipients, the dry powders or liquid, which is used to bind hold all ingredients used in formulation of dosage form.

Binders are mixed in formulation to convey plasticity or to increase the bonding strength between the particles in formulation.

Types of binders:

1) On the bases of their source:

i) Natural polymers: starch, gelatin, gums.

ii) Synthetic polymers: PVC, HPMC, MC.

iii) Sugar: Sorbital, Glucose.

2) On the basis of their application:

i) Solution binders: Gelatin, cellulose, PEG.

ii) Dry binders: Methyl cellulose.

Advantages:

Have low toxicity

Biodegradable

Easily available

Low cost

Enhance stability.

Ex:

Tragacanth — Root of astragulus gummifera — Family - papilionaceae. — Tragacanthin.

Diluents:

→ Diluents are those excipients which are used to enhance the bulk of any formulation or to dilute any liquid formulation.

→ Major function of diluents/fillers is that, they provide a structural from and fill the size of dosage form and make them suitable for administration by enhancing the bulk volume.

→ It is used to improved cohesion, enhance the flow & adjust the weight of the tablet as per die cavity.

Types:

Chemical nature: Organic materials - Carbohydrates.

Inorganic - Dibasic calcium phosphate.

Solubility: Water soluble - sucrose, mannitol

water insoluble - starch, powdered cellulose

Example:

Mannitol	Saccharine exudation from stem of fraxinus ornus, Leaca II.	Sugar alcohol.

Viscosity enhancer:

→ A thickening agent is a substance which can increase the viscosity of a liquid without substantially changing its property.

→ A viscosity modifier can decrease the thickness of a liquid to improve pour ability and ultimately make it more palatable.

→ Some thickening agents may also function as stabilizers when they are used to maintain the stability of emulsion.

Types:

Natural thickener - cellulose - HEC used in shampoo or body wash.

Mineral thickener - Bentonite: Mg silica and aluminium silicate.

Advantages:

1) Inhibit the crystal growth.

2) Enhances the physical stability.

Disadvantages:

1) Hinders redispersibility of the sediment.

2) Retards the absorption of the drug.

3) Creates problem in handling of the material during manufacturing.

Example:

Xanthum gum — Natural gum derived as an excretion product from bacteria, Xanthomonadaceae.

Used b/w 0.1-0.5 composed of pure polysaccharides

Disintegrants:

→ Disintegrating agents accelerate the swelling or disintegration of tablet comes in contact with a fluid.

→ Disintegrates are added to the formulation as it breaks the dosage form into smaller particles when it comes in contact with the liquid, smaller fragments have greater surface area which will increase the dissolution of the drug: Eg: starch.

Characteristics:

* Poor solubility
* Poor gel formation
* Good hydration capacity
* Good compressibility and flow property.
* No tendency to form complexes with the drug.

Flavors:

→ Flavors can be used to mask unpleasant taste active ingredients and improve the acceptance that the patient will complete a course of medication.

→ FDA defines a natural flavor as the essential oil, oleoresin, essence or extractive protein hydrolysate, distillate or any product of roasting, heating or enzymolysis, which contain the flavouring constituents derived from spice, fruit or fruit juice or vegetables juice, herb, barks etc...

Examples:

Orange oil	It is obtained from fruits of citrus sinesis L, Rutaceae.	α-pinene, β-pinene, sabinene, myrcene.

Assignment II

Name: M. Swathy

Course: B. Pharm VI Semester

Subject: Herbal drug Technology.

Topic: Herbal excipients

Herbal Excipients

Introduction:

Excipients can be defined as non-active ingredients that are mixture of therapeutically active compounds to form medicines. The excipients are substance which are used as a medium for giving a medicament

These help in processing of the drug delivery system during its manufacturing. Protect, support or enhance stability, bioavailability or patients acceptability.

Classification of Excipients:

Colorants - Henna, indigo, caramel, Chorophyle

Sweeteners - Glychyrrhiza, honey, Stevia.

Binding Agents - Acacia, gelatin, tragacanth, Starch

Viscosity enhances - Pectin, tragacanth, Cellulose

Diluents - Lactose, Starch, mannitol, Sucrose.

Disintegrating agent - Starch, isapgol, husk, CMC.

Ointment bases - Lanolin, beeswax

Emulsifying agent - Acacia, agar, guar gum

Flavouring agent - cardamon, vanilla, lemon oil.

Perfumes - Rose, lavender, sandal wood.

Advantage:

Eco friendly
Cost effective
Easy availability
Safe and without side effects
Biocompatible and non-toxic

Disadvantage:

Microbial contamination
Heavy metal contamination
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Variation

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Binders

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Binders are mixed in formulation to convey plasticity or to increase the bonding strength between the particles in formulation

Types:

1) on the basis of their source

Natural polymers: starch, gelatin, gums.

Synthetic polymers: PVC, HPMC, MC

Sugar: Sorbitol, Glucose

2) on the basis of their application

Solution binders: gelatin, cellulose, PEG

Dry binders: methyl Cellulose

Advantages:

- Have low toxicity.
- Biodegradable
- Easily available
- Low cost
- Enhance stability

Ex

Tragacanth — Root of astragalus gummifera F- papilionaceae — Tragacanthin

Diluents:

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Inorganic - Dibasic calcium phosphate

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Eg:

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Mineral thickeners Bentonite, Mg Silica & aluminium silicate

Advantage:

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Enhances the physical stability

Disadvantage:

Hinder redispersibility of the sediment.

Retards the absorption of the drug.

Creates problem in handling of the material during manufacturing

Eg

Xanthum gum	Natural gum derived as an excretion product from bacteria, Xanthomonadaceae	used b/w 0.1-0.5%. composed of pure polysaccharide

Disintegrants.

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