

High Fiber Dietary Supplement for Diabetes

- ❑ Unique fiber blend, all designed to facilitate normalization of blood glucose
- ❑ Formulation comprises of novel fibers fortified with suitable vitamins, minerals, and whey proteins as a source of crucial nutrients..
- ❑ It is a nutritional supplement which can be reconstituted to a variety of caloric densities.
- ❑ Appropriate for patients with normal gastrointestinal function for prevention and correction of Diabetes



ADVANTAGES

- ✓ **No side effects**
- ✓ **Cost effective**
- ✓ **Safe to use**

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Mosquito Repellent

- ❑ Mosquito-borne diseases are those spread by the bite of an infected mosquito. Diseases that are spread to people by mosquitoes include Zika virus, West Nile virus, Chikungunya virus, dengue, and malaria. Hence there is constant need for new innovations in the field of Mosquito repellents. At Amity we have come up with a novel blend of oils along with other additives which can be formulated in different forms like cream, sprays, candles, Infusers etc.
- ❑ The raw materials for extracting the oils is available in plenty and is economic in its costing.
- ❑ It is very officious as it kills around 80 % of mosquitoes.
- ❑ Quickly starts working
- ❑ Our formulation being a novel blend of oils can be formulated in different forms thus enhancing its commercial viability.



GRANTED PATENT

Novel Biopolymers as Anti-Diarrheal

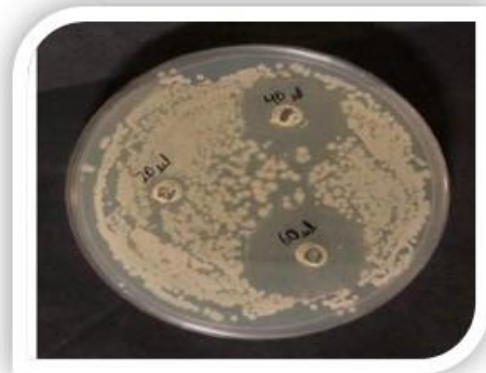
- Novel composition comprising of biopolymers, amino acids, and suitable additives
- Amino acids help in toning the lining of small intestine and also enhances the growth of healthy bacteria.
- Synergistically effective formulation



FORMULATION FOR DIARRHEA

- ✓ **No side effects**
- ✓ **Cost effective**
- ✓ **Safe to use**
- ✓ **Balanced composition of electrolytes.**
- ✓ **Maintains optimum pH of the digestive tract.**

- **Petri Plates showing zone of inhibition (ZOI) of *E.coli* in wells containing different concentrations (20 μ L, 40 μ L, 60 μ L) of synergistic formulation. ZOI of 60 μ L being 30 mm.**



COMMERCIAL VIABILITY

- Pharmaceutical company
- Biopolymer Company

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Novel Cleansing Formulation

- ❑ Cleansing products for leather or similar goods with conditioning effects are available in the market, but the majority of them are viscous emulsions or creamy in nature. The inherent problem associated are their stability issue and poor spread ability due to their highly viscous nature. The product requires a high amount of emulsifying agents. Overall, the application of such formulation is not customer-friendly, particularly difficult to apply by spraying.



We at Amity prepare a monophasic, low viscous cleansing formulation with an excellent conditioning effect. Effective for cleaning of goods, particularly useful for leather, nylon and polyester goods etc. It can be customized for other surfaces like wood and metal. The preparation process involves the in-situ generation of the main cleaning component and does not require the isolation or separation of the individual component/s from the mother liquor.

- ✓ **Economic**
- ✓ **Low Viscosity**
- ✓ **Monophasic**
- ✓ **Excellent Conditioning Effect**

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Oil for Muscle Pain



- ❑ Muscle Pain Oils available in the market give temporary relief and take long time for therapy and mostly in allopathy steroids and painkillers are given whereas in Amity innovation. we have used oils which if used consistently relieves one of the pain completely. At amity we have come up with a formulation which is novel blend of oil. All the oils together have a quick therapeutic effect. You have to take few drops of the oil and massage it for 5 minutes and it starts showing its effect by reducing inflammation and relieving one of the pain.

The uniqueness and distinctive features of the solution:

- ❑ Novel blend of oils cost of preparation is low Oils are mostly cold pressed and few are extracted Quick action All the oils have been supported with literature.

Paint Additives

- ❑ Innovation is related to a paint additive that exhibits excellent pseudoplastic rheological behaviour which improves easy processability, brush ability, has easy dispersion, excellent pigment stabilization, improves flow and levelling of water-based paints.
- ❑ Additive generally used by Paint industry is Hydroxyethyl cellulose whose cost is Rs.500/-per Kg whereas the raw material used by us in Rs. 100/Kg.
- ❑ The raw material/Starting material used by Amity is 5 times cheaper than HEC.
- ❑ The inventor has made pilot scale samples in both liquid and solid states and have test results from NABL accredited lab. In addition, anti repellent activity of the oil added in paint was tested from Malarial Research Institute, Dwarka and it showed excellent repellency.
- ❑ Amity has prepared both powdered and liquid samples of Paint additive. The results of which are at par with HEC, the commonly used additive.



Sample 1



Sample 2

INNOVATIVE HERBAL PRODUCTS MADE AT AMITY INSTITUTE OF PHYTOMEDICINE AND PHYTOCHEMISTRY (AIP&P)



FORMULATION FOR DAIBETES: Nutraceutical formulation for maintaining sugar level for daibetes patients.

FORMULATION FOR DIARRHEA : Nutraceutical formulation for effective treatment for chronic dairrhea.

FORMULATION FOR HAEMORRHOID: Nutraceutical formulation for overall immunity and for treatment of haemorrhoid.

HERBAL TEA: Reduces stress, boosts stamina, strengthens immunity, increases the body metabolism and helps in digestion of food. Rich in anti-oxidants it treats fatigue and tiredness.

HERBAL HAIR DYE: Pure herbal dyes prepared from different plant parts useful for colouring hair. Have shelf life more than 2 years.

HERBAL COLOURS: Pure colours prepared from traditional method using different hair parts. It can be utiized for gual, different cosmaceutical and pharmaceutical formulation.

INNOVATIVE HERBAL PRODUCTS MADE AT AMITY INSTITUTE OF PHYTOMEDICINE AND PHYTOCHEMISTRY (AIP&P)



HERBAL SHAMPOO : Innovative product for maintaining hair equal in strength and shine.

HERBAL MULTIPURPOSE CREAM: Innovative product for acne, pimples, rejuvenation and maintains requisite hydration of face.

SUNSCREEN CREAM: Innovative product for defense against harmful UV rays.SPF value of 30 and can be adjusted by increasing/decreasing concentration of active ingredient.

Self Defense Spray

- ❑ Novel Self Defense Spray formulation which has enhanced irritation index, inflammation and pain.
- ❑ Self Defense Spray is simple to manufacture, low in cost and convenient to operate.



This Formulation maintains the irritant effect in the eyes for longer period of time and after 45 mins the effect starts receding.

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Shampoo for Dry and Greasy Hair

Technology Advantages:

- Suitable for all hair types
- SLS free
- 3 years shelf life
- 20-25 Rs./Kg





AMITY INSTITUTE OF PHYTOCHEMISTRY AND PHYTOMEDICINE (AIP&P) BIODEGRADABLE TECHNOLOGIES FOR A GREEN FUTURE

BIODEGRADABLE PLASTIC

GRANTED PATENT

Biodegradable Plastic

- Simple chemical process and an easier manufacturing procedure
- Exhibits excellent synergy through the use of Polysaccharides
- Thickness and strength variation can be customized.
- Safe disposal

Economic, Safe and Non-Toxic

- PLA Free
- Cost effective
- Environment friendly
- Easy availability of raw materials

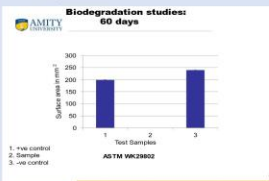


Industrial scale Environmental-Friendly Cost-Effective Disposable Plates, Spoons and Pots



Bioplastic film

Injection Mouldable Biodegradable plastic for warming food



Biodegradable Plastic Products 100% degraded within 60 days under Soil conditions



BIODEGRADABLE MULCH FILMS

Biodegradable Plastic Mulch Films

Plastic mulch films, especially in the Indian market, mainly consist of low-density and linear low-density polyethylene, which do not readily biodegrade. These polyethylene-based mulches must be retrieved and disposed of after usage. As a result, agricultural plastic mulch films are often contaminated with soil and are not accepted by many recycling facilities. Indeed, the presence of microplastics in farmlands resulting from nondegradable mulch film is a severe soil threat that hinders the sustainable development of agriculture.

To address this critical problem, we in Amity University are collaborating with Technical University Munich wherein they will investigate different biopolymers extracted from native Indian agro-waste properties to develop novel, cost-effective, environment-friendly mulch films and will develop biodegradable plastic mulch. The raw material utilized for making this mulch film is indigenous.



ADVANTAGES

- Novel
- Cost-Effective
- Environment Friendly

BIODEGRADABLE STRAW

Considering the seriousness, Indian government has banned the single use plastic, including plastic straw. Now alternative of plastic straw are being searched. Our group is working on natural straw since more than two year. Now we come up with plant-based straw and developed indigenous green process to enhance its self-life.

ADVANTAGES

- We developed a green and eco-friendly process to enhance the self-life and tensile strength of the straw.
- Cost of processing is very economic
- The process involve nontoxic and can be coated food grade coating agents (optional).
- Processing not only increase the tensile strength but inhibited its shrinkage process.
- Length of straw can be customized as per requirement.
- Diameter is wide generally from 5 mm to 7.5 mm, so it can be utilized for the drinking of viscous juices.
- Straw do not get soften upon deeping in hot water (80 °C) for 45 minutes



BIODEGRADABLE EDIBLE FILMS

Biodegradable Edible Film

These films usually are derived from renewable and edible components, offering the important advantage of being biodegradable and environment friendly. These edible films can be consumed along with the packaged goods is their greatest benefit over conventional polymers.

ADVANTAGES

- This transparent natural plastic film which are biopolymer based.
- Biodegradable sealing food items.
- Helps keeping food away from insects and microbial contamination, dust etc.
- Keeps food fresh, reduced risk of wastage of food by increasing shelf life.
- Thus, edible films provide means to preserve, protect, merchandise, market, distribute foods.
- It plays significant role in how products reach consumers in a safe form without compromising the quality.
- Making edible films results in reduced pollution.

	PVC (ing film)	Component A	Component B
Thickness (mm)	0.61	0.75	0.45
Area (m ²)	2.9	1.6	0.4
Glass (at 45)	86	90	75
Shrinkage (%)	MSD	37	16
Tensile strength	TD	15	40
Elongation	MSD	230	300
At break (%)	TD	320	850
Tensile strength at 200%	MSD	3600	2700
Tensile strength	MSD	4400	2900
At break (psi)	TD	4110	2880
Recovery after 20% elongation (%) set	MSD	2.0	6.3
Recovery after 100% elongation (%) set	TD	5.8	7.6
Recovery after 100% elongation (%) set	MSD	14.7	24.3
Recovery after 100% elongation (%) set	TD	17.5	30.1
1% secant modulus (psi)	MSD	8.2	8.5
1% secant modulus (psi)	TD	5.6	8.4
Elongation at break (mm)	MSD	45	95
Elongation at break (mm)	TD	90	325
Start impact	TD	680	280

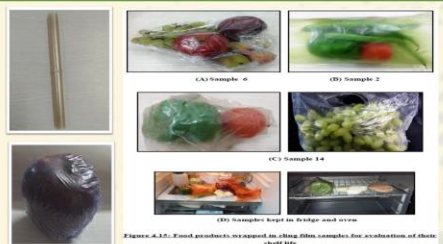


Figure 4.15. Food products wrapped in biodegradable edible films, complete the substitution of their plastic life



GRANTED PATENT

Vegetarian Hard Capsules

- ❑ Vegetarian capsules comprising of palatable polymers and completely devoid of gelatin.
- ❑ Capsule possesses multilayer forming ability, so their thickness, tensile strength, and drug release profile can be easily customized based upon the need.
- ❑ Already granted patent and ready technology for transfer at commercial scale.



DISINTEGRATION TEST

pH	Time (minutes)
1.2	10
7.4	20
9.0	30

- ✓ **Safe & Non- Toxic**
- ✓ **Multimolecular polymeric film can control drug release**

EFFECT OF TEMPERATURE AND TIME



30 Days



90 Days



120 Days



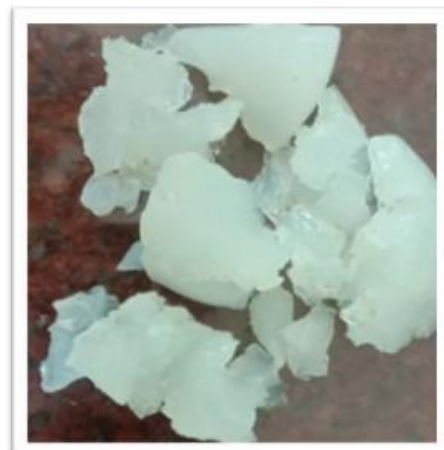
180 Days

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Biodegradable Fragrance Formulation

- ❑ Essential oils and fragrance components are volatile in nature, so, their effects persist for a short duration of time. To prolong the effect, their entrapment in the gel form is a good and viable option. Gel-based pouches are currently emerging in the market and becoming a part of routine-use products.
- ❑ Some of the key challenges associated with gel-based pouches are to meet the desirable features like, high entrapment efficacy, biodegradability, eco-friendliness, non-toxicity, and competitive price.



Features of the Product

- ✓ **Economic**
- ✓ **Biodegradable**
- ✓ **Obtained from Natural Sources**
- ✓ **Long sustained Release effect**
- ✓ **High Loading Capacity**
- ✓ **Dual Matrix Mechanism**

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GRANTED PATENT

Biodegradable Plastic

- ❑ Simple chemical process and an easier manufacturing procedure
- ❑ Exhibits excellent synergy through the use of Polysaccharides
- ❑ Thickness and strength variation can be customized.
- ❑ Safe disposal

**Economic, Safe
and Non-Toxic**

- ✓ **PLA Free**
- ✓ **Cost effective**
- ✓ **Environment friendly**
- ✓ **Easy availability of raw materials**



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Carotenoids Enriched Functional Foods Derived from Agri-Horticultural Wastes

- ❑ Plant extracts to obtain higher carotenoids content from agri-horticulture wastes.
- ❑ It provides a method for isolating carotenoids from plant extracts, wherein the process may be conducted under relatively low temperatures and the solvents used are environment friendly.

Herbal Colour

- A novel, safe and eco-friendly method for preparing herbal colour compositions for multiple uses.
- The herbal compositions contains colorants extracted from plants.
- Provide an alternative to synthetic colours.
- Provides varied range of colours whose intensity can also be varied.
- Widely used for Food items and in Cosmetics for Lipsticks, Hair Dyes, Powder, Gulal etc.



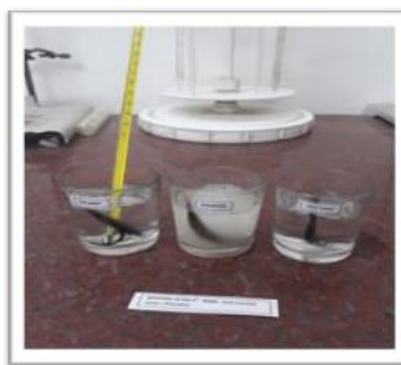
- ✓ **Safe and Eco Friendly**
- ✓ **Different Shades**
- ✓ **Retain of Colour and Texture**

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Herbal Hair Dye

The invention provides a natural hair dye composition consisting different parts of selected herbs./medicinal plants along with novel fixating agents. The dye composition not only colours the hair but also nourishes hair and the medicinal property of the dye prevents any fungal infection. It also has a long shelf life.



ADVANTAGES

- There were different shades of herbal hair dye developed.
- All of the hair samples retained the colour consistency after cold and hot wash.
- Colours have shown more than 1.5 years of shelf life.
- There is no damage seen on hair structure after application of the dyes.
- There is less than 5 % loss of colour.

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Herbal Sunscreen Cream

Technology Advantages:

- ❑ Suitable for all SKIN TYPES
- ❑ SPF value 25-30
- ❑ > 3 years shelf life
- ❑ 40-45 Rs./Kg

