BCSIR Laboratories Dhaka, BCSIR

Process	***A Process for the Commercial Production of Spirulina***
Area	Human consumption
Uses	Nutraceuticals Food Supplement

Spirulina is a microscopic aquatic blue-green algae. Enrich with natural protein, vitamin & minerals. It combats with different type of diseases (diabetics, anemia, weakness). Doses : 1 tea spoon or 2-3 gram, 4-6 tablets or capsule (500 mg) daily. In 1974, World Food Program declared "Food for the Tomorrow.

Tablets & Capsule form of Spirulina

Scale of Development	The process is already under commercialization
Major Raw Material	Sodium bi carbonate, Potassium chloride, EDTA
Major Plant Equipment/Machinery	S.S. wheel, grinder, harvester, Plastic net tray.
Details of specific application	This product is mainly used for Human consumption
Status of Development	This process is accepted by the BCSIR authority and it is already Commercialized
Ecological/Environmental Impact(if any, specify briefly	This process is environment friendly and after commercialization this product able to fulfill our national demand.
Cost of product	3,000 Tk/kg spirulina powder (As per date 01/03/2023)L
Key wards	Spirulina, Protein, Vitamins, Minera

3,000 Tk/kg spirulina powder (As per date 01/03/2023)L

BCSIR Laboratories Dhaka, BCSIR

Process	**Fruit-flavoured Salt for Gastric comfort**
Use	A process for production of fruit-flavoured salt which relieves discomforts due to food intake
Area	Gastric comfort, Relieves acidity
Salient features	The stomach naturally secretes acid that is essential to prevent bacterial growth and also to aid digestion of foods. When there is excess production of acid by the gastric glands of the stomach, it results in the condition known as acidity. Excessive acid in stomach may cause several discomforting situation like burning in the stomach and throat, restlessness, belching, nausea, sour taste, indigestion, constipation etc. The action of the acid neutralizing food supplements basically results in the increase of the stomach pH. Due to this increase in the pH value the symptoms typical of hyperacidity are reduced or even eliminated.
Scale of development	The process is standardized at bench scale.
Status of development	The product has been developed and leased out to the local entrepreneur ‘‘M/S Grand Consumer’’ of Pabna
Major Raw Material	Sodium Bicarbonate, Citric Acid, Tartaric Acid, Aspartame, Food Grade Color, Food Grade Essence
Major Plant Equipment/Machinery	Dryer, pH meter, Weighing machine, Moisture analyser.
Commercialization status	The product has been developed and leased out to the local entrepreneur ‘‘M/S Grand Consumer’’ of Pabna
Techno-Economics	The developed process is environment friendly. All raw materials used in the process are nontoxic. None of the consumables or procedures has adverse impact on ecology or environment.
Cost	10/- per 5 gram
Key words	Fruit-flavoured salt, Gastric comfort, Food intake.

BCSIR Laboratories Dhaka, BCSIR

Process	Formulation and development of ultrasound gel from ingredients available in local market.
Use	Ultrasonography , ECG
Area	Hospital and Clinic

Salient features

There will be no need to import

1. Valuable foreign currency will be saved
2. Easily availability will increase its sufficient use
3. It will be helpful to diagnosis system

Scale of development	The process is standardized at bench scale.
Status of development	This process is clinically tested and ready for submission and it is ready for commercialization
Major Raw Material	Acrylic polymer, glycerine
Major Plant Equipment/Machinery	S.S. Still container, mechanical stirrer and water bath
Commercialization status	Ready for commercialization
Techno-Economics	This process is environment friendly and after commercialization this product able to fulfill our national demand
Cost	100 tk/kg
Key words	Acrylic polymer, glycerine

BCSIR Laboratories Dhaka, BCSIR

Process	**A process for the production of chitin from shrimp industry waste**
Use	**Chitin is useful for several medicinal, industrial and biotechnological purposes**
Area	**Food & Pharmaceutical Industries**
Salient features	Chitin was first isolated and characterized in 1811 by the chemist and botanist Henry Braconnot. Chitin is structurally 2-acetamido-2-deoxy-D-glucose (N-acetylglucosamine) residues linked by ß-(1-4) bonds, is the second richest polysaccharide of animal origin found in nature after cellulose and it is characterized by its fibrous structure.Chitin is extracted from the shells of shrimp, lobster, and crabs. It is a fibrous substance that might block absorption of dietary fat and cholesterol.
	
Scale of development	The process is standardized at bench scale.
Status of development	This process is accepted by the BCSIR authority and it isready for commercialization
Major Raw Material	Shrimp processing waste (Head, body, Tail), Sodium hydroxide, Hydrochloric Acid
Major Plant Equipment/Machinery	S.S.Still container, mechanical stirrer and hot plate
Commercialization status	This process is accepted by the BCSIR authority and it isready for commercialization
Techno-Economics	This process is environment friendly and after commercialization this product able to fulfill our national demand
Cost	14000/Kg
Key words	Chitin, Shrimp shell, Hydrochloric acid

BCSIR Laboratories Dhaka, BCSIR

Process	**A process for the production of Production of Zinc Acetate from Zinc Oxide**
Use	**Zinc acetate is commonly used as a dietary supplement and in lozenges used to treat the common cold and treat zinc deficiencies and treatment of Wilson's disease**
Area	**Zinc deficiencies, Antibiotic**
Salient features	Zinc acetate is used in chemical synthesis for different pharmaceutical products and as a dietary supplement and in lozenges used to treat the common cold. It along is thought to be a more effective treatment than zinc gluconate. Zinc acetate can also use to treat zinc deficiencies. As an oral daily supplements it is used to inhibit the body's absorption of copper as part of the treatment of Wilson's disease. It is also sold as an astringent in the form of an ointment, a topical lotion or combined with an antibiotic such as erythromycin for the topical treatment of acne, furthermore zinc acetate is commonly sold as a topical anti-itchointment
Scale of development	The process is standardized at bench scale
Major Raw Material	Zinc oxide and acetic acid
Major Plant Equipment/Machinery	S.S.Still container, mechanical stirrer, hot plate, round bottom flask, heating mentel
Commercialization status	This process is accepted by the BCSIR authority and it isready for commercialization
Techno-Economics	This process is environment friendly and after commercialization this product able to fulfill our national demand
Cost	900.0/kg
Key words	Zinc oxide, acetic acid, dietary supplement, lozenges

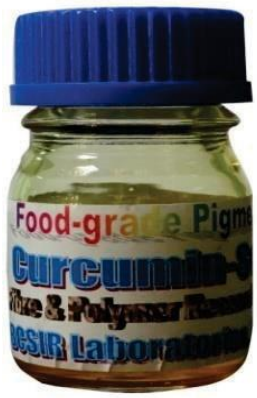
BCSIR Laboratories Dhaka, BCSIR

Process	**Production of chitosan from shrimp shell waste**
Use	**Agriculture, Food preservative, Drug delivery, Waste water treatment, Cosmetics etc**
Area	**Food & Pharmaceutical Industry, ETP**
Salient features	Chitosan is a cationic polysaccharide with linear chain consisting of β-(1,4)-linked 2-acetamino-2-deoxy-β-D- glucopyranose and 2-amino-2-deoxy-β-D- glucopyranose. It does not show any adverse effects when in contact with human cells and this property has attracted chemist's scientific attention to chitosan. The biological activities of chitosan make it promising agent in controlled drug delivery systems, which can control the release of drug for long period of time. Chitosan also has antimicrobial activity, wound- healing properties, and can decrease the level of cholesterol inhuman body
Scale of development	The process is standardized at bench scale.
Status of development	
Major Raw Material	Shrimp processing waste (Head, body, Tail), Sodium hydroxide, Hydrochloric Acid
Major Plant Equipment/Machinery	S.S.Still container, mechanical stirrer and hot plate
Commercialization status	This process is accepted by the BCSIR authority and it is ready for commercialization
Techno-Economics	The developed process is environment friendly. All raw materials used in the process are nontoxic. None of the consumables or procedures has adverse impact on ecology or environment.
Cost	20000/Kg
Key words	Chitin, Shrimp shell, Hydrochloric acid

Fig. : Chitosan Powder

BCSIR Laboratories Dhaka, BCSIR

Process	**Water Soluble Curcumin Pigments**
Use	• Drug formulation as an active ingredient • Color for food, drug and cosmetics • As an anti-oxidant • As a chemotherapeutic agent • As an anti-inflammatory agent
Area	Food and pharmaceuticals
Salient features	✓ A simple process for the preparation of Food, Drug and Cosmetic grade water soluble curcumin pigments from turmeric powder. ✓ Water soluble curcumin pigment has great demand in local and international market. ✓ It has been prepared from locally available raw turmeric powder which will meet internal demand as well as will reduce import dependency.
Scale of development	The process is standardized at bench scale
Major Raw Material	Turmeric, Food grade Solvent & Surfactant
Major Plant Equipment/Machinery	Grinder, Mechanical stirrer, hot plate
Commercialization status	Ready for commercialization
Techno-Economics	The developed process is environment friendly. All raw materials used in the process are nontoxic. None of the consumables or procedures has adverse impact on ecology or environment.
Key words	Water soluable pigment, Drug formulation, Food, Cosmetic



BCSIR Laboratories Dhaka, BCSIR

Process	Production of oil from kernel of ripe mango
Use	As an active ingredient in soap, shampoo, cream etc. manufacturing
Area	Cosmetic Industries
Salient features	 • Useful in soap, shampoo, cream etc. • Manufacturing Cholesterol balance • Lowers blood sugar • Reduce acne • Maintain healthy weight (Ref: Health Benefit times.com)
Scale of development	The process is standardized at Laboratory scale
Status of development	Product developed, analyzed and process ready to be leased out
Major Raw Material	Ripe Mango seeds as wastes of mango processing industry, nHexane
Major Plant Equipment/Machinery	Soxhlet apparatus, solvent distillation plant
Commercialization status	Mango kernel oil is being imported but there is a bright future for establishing this industry in our country
Techno-Economics	The developed process is environment friendly. All raw materials used in the process are nontoxic. None of the consumables or procedures has adverse impact on ecology or environment.
Cost	around TK. 59 lakh for 30 M.T. production per year
Key words	Mango kernel oil, cosmetic ingredient