

MOLECULAR GASTRONOMY · CULINARY INNOVATION



NTHRYS

OPC PVT LTD

Molecular Gastronomy Training Programs

A comprehensive global catalogue of hands-on training protocols — covering the full spectrum of modern culinary techniques from hydrocolloids and cryogenics to precision fermentation and digital cuisine.

110

PROTOCOLS

12

CATEGORIES

2026

EDITION

Program Categories at a Glance

This catalogue lists every molecular gastronomy protocol taught at our training centre, organised into 12 technology streams. Each protocol carries a unique code, a defined training duration in hours, and a per-protocol training fee. Programs are designed for chefs, food technologists, R&D professionals, hospitality teams and culinary students worldwide.

STREAM	CATEGORY	FOCUS	COUNT	HOURS
NMG-HG	Hydrocolloids & Gel Systems	Sphere, gel, film and structured texture work	15	129
NMG-EF	Emulsions, Foams & Aerations	Lecithin systems, espumas and micro-emulsions	9	78
NMG-TC	Thermal & Precision Cooking	Sous-vide, low-temperature, pressure and evaporative methods	9	81
NMG-CR	Cryogenic & Cold Processing	Liquid nitrogen, dry ice and anti-griddle methods	11	89
NMG-DP	Dehydration, Powders & Concentration	Drying, powder technology and membrane separation	8	74
NMG-IA	Infusion, Carbonation & Aroma	Vacuum & whipper infusion, smoking and aroma capture	11	93
NMG-EZ	Enzymatic & Fermentation	Transglutaminase, koji and lacto-fermentation	10	92
NMG-EA	Energy-Assisted Techniques	Sound, light, electricity and magnetism in cooking	9	91
NMG-CC	Chemistry, Sugar & Confectionery	pH, Maillard, tempering and sugar craft	8	69
NMG-MS	Multi-Sensory & Perceptual Design	Crossmodal design, optical illusion and taste perception	10	82
NMG-CD	Computational & Digital Cuisine	Data, printing and augmented dining experiences	5	55
NMG-FR	Frontier & Sustainable Ingredients	Precision fermentation, alt-proteins and edible bioplastics	5	60
Total protocols & training hours			110	993

HOW TO READ A CODE

NMG – HG – 01

NMG

Nthrys Molecular Gastronomy

HG

Category stream

01

Protocol number

01

CATEGORY · NMG-HG

Hydrocolloids & Gel Systems

Sphere, gel, film and structured texture work

15

PROTOCOLS

CODE	PROTOCOL	DESCRIPTION	DURATION	FEE (INR)
NMG-HG-01	Spherification	Sodium alginate & calcium bath to form caviar-like liquid spheres.	8 hrs	₹ 4,500
NMG-HG-02	Reverse Spherification	Calcium-rich liquid dropped into alginate bath for thicker, longer-lasting membranes.	8 hrs	₹ 4,500
NMG-HG-03	Frozen Reverse Spherification	Pre-freezing the core for perfectly round, fillable spheres of any size.	9 hrs	₹ 5,500
NMG-HG-04	Basic Gelification	Setting liquids using gelatin, agar or pectin into solid edible gels.	7 hrs	₹ 3,500
NMG-HG-05	Fluid Gels	Sheared gels that flow like sauces while retaining gel-network structure.	8 hrs	₹ 4,500
NMG-HG-06	Methylcellulose Hot Gels	Reverse-thermal gels that set on heating and melt on cooling.	9 hrs	₹ 5,500
NMG-HG-07	Low-Acyl Gellan Gels	Firm, brittle, optically clear gels ideal for precise cuts and panels.	9 hrs	₹ 5,500
NMG-HG-08	High-Acyl Gellan Gels	Soft, elastic gels stable at elevated serving temperatures.	9 hrs	₹ 5,500
NMG-HG-09	Agar Gels	Plant-based firm gels for noodles, sheets, ribbons and pearls.	7 hrs	₹ 3,500
NMG-HG-10	Agar Clarification	Freeze-thaw filtration through agar gel for crystal-clear stocks and juices.	9 hrs	₹ 5,500
NMG-HG-11	Iota & Kappa Carrageenan	Tunable elastic-to-brittle seaweed gels with controllable mouthfeel.	10 hrs	₹ 6,000
NMG-HG-12	Xanthan Suspension & Thickening	Cold-soluble hydrocolloid for stable suspensions and clean viscosity.	7 hrs	₹ 3,500
NMG-HG-13	Edible Films	Thin transparent gel sheets for wrapping, sealing or flavor encapsulation.	9 hrs	₹ 5,500
NMG-HG-14	Structured Fluids	Liquids that hold layers or shapes without fully solidifying.	10 hrs	₹ 6,500
NMG-HG-15	Thermoirreversible Gels	Heat-stable gels that maintain structure when warm or hot.	10 hrs	₹ 6,500

CODE	PROTOCOL	DESCRIPTION	DURATION	FEE (INR)
NMG-EF-01	Lecithin Emulsions	Soy or sunflower lecithin to stably bind oil and water systems.	7 hrs	₹ 3,500
NMG-EF-02	Foams & Airs	Light frothy textures from flavored liquids and natural emulsifiers.	7 hrs	₹ 3,500
NMG-EF-03	Espumas (Siphon Foams)	N ₂ O-charged whipped foams produced from a pressurised cream siphon.	8 hrs	₹ 4,500
NMG-EF-04	Hot Methylcellulose Foams	Foams that hold structure and aeration at serving temperature.	9 hrs	₹ 5,500
NMG-EF-05	Cold-Set Gelatin Foams	Aerated mousses stabilised by gelatin and set under refrigeration.	8 hrs	₹ 4,500
NMG-EF-06	Pickering Emulsions	Solid-particle stabilised emulsions without traditional surfactants.	10 hrs	₹ 6,500
NMG-EF-07	Inverse Emulsions	Water-in-oil systems for novel release patterns and mouthfeel.	9 hrs	₹ 6,000
NMG-EF-08	High-Pressure Homogenization	Extreme pressure to produce ultra-fine, exceptionally stable emulsions.	11 hrs	₹ 8,500
NMG-EF-09	Aerated Chocolate	Vacuum-aerated tempered chocolate with characteristic bubble texture.	9 hrs	₹ 6,500

CODE	PROTOCOL	DESCRIPTION	DURATION	FEE (INR)
NMG-TC-01	Sous-vide	Vacuum-sealed precision low-temperature cooking in a controlled water bath.	8 hrs	₹ 4,500
NMG-TC-02	Low-Temperature Cooking	Long, gentle cooking below traditional temperatures for tenderness retention.	8 hrs	₹ 4,500
NMG-TC-03	Combi-Oven Steaming	Combined convection and steam for controlled hydration and texture.	9 hrs	₹ 5,500
NMG-TC-04	CVap Cooking	Controlled-vapor humidity-precise low-temperature cooking technology.	10 hrs	₹ 7,000
NMG-TC-05	Modernist Pressure Cooking	High-pressure rapid extraction and accelerated flavor development.	9 hrs	₹ 5,500
NMG-TC-06	Pressure-Infused Stocks	Rapid, concentrated stocks produced under sealed pressure conditions.	8 hrs	₹ 4,500
NMG-TC-07	Rotary Evaporation	Low-temperature vacuum distillation that captures delicate volatile aromas.	12 hrs	₹ 9,500
NMG-TC-08	Pacojet Processing	Ultra-fine micro-puréeing of frozen products into mousses and ice creams.	10 hrs	₹ 8,500
NMG-TC-09	Torch & Salamander Finishing	Controlled Maillard browning and crust development on plated items.	7 hrs	₹ 3,500

CODE	PROTOCOL	DESCRIPTION	DURATION	FEE (INR)
NMG-CR-01	Liquid Nitrogen Flash Freezing	Instant freezing with LN ₂ for ultra-fine crystalline textures.	8 hrs	₹ 5,500
NMG-CR-02	Nitro-Shattering	Freezing then shattering ingredients into dramatic crystalline shards.	8 hrs	₹ 5,500
NMG-CR-03	Liquid Nitrogen Ice Cream	Tablesides or in-bowl ice cream with exceptionally small ice crystals.	7 hrs	₹ 4,500
NMG-CR-04	Dragon's Breath Puffs	LN ₂ -dipped cereal or snacks that release dramatic vapor when eaten.	7 hrs	₹ 4,500
NMG-CR-05	Anti-Griddle Plate Freezing	Surface freezing one side while keeping the other side soft.	8 hrs	₹ 5,500
NMG-CR-06	Dry-Ice Powdering	Solid CO ₂ used to powder oils, cheeses or fresh fruits.	8 hrs	₹ 4,500
NMG-CR-07	Dry-Ice Carbonation	Direct CO ₂ infusion into whole fruits or liquids using dry ice.	7 hrs	₹ 4,000
NMG-CR-08	Cryofiltration	Freeze-thaw clarification that removes impurities while concentrating flavor.	10 hrs	₹ 6,500
NMG-CR-09	Cryo-Concentration	Selective ice removal to concentrate juices, wines and stocks.	10 hrs	₹ 6,500
NMG-CR-10	Ice Filtration	Slow thawing through ice for exceptionally clear consommés.	9 hrs	₹ 5,500
NMG-CR-11	Thermal Shock	Rapid temperature swings used to create within-bite texture contrasts.	7 hrs	₹ 3,500

05

CATEGORY · NMG-DP

Dehydration, Powders & Concentration

Drying, powder technology and membrane separation

8

PROTOCOLS

CODE	PROTOCOL	DESCRIPTION	DURATION	FEE (INR)
NMG-DP-01	Air Dehydration	Low-heat controlled drying to concentrate flavor and extend shelf life.	6 hrs	₹ 3,000
NMG-DP-02	Freeze-Drying (Lyophilization)	Sublimation drying that preserves structure, color and aroma.	12 hrs	₹ 8,500
NMG-DP-03	Vacuum Drying	Drying under reduced pressure for heat-sensitive delicate ingredients.	10 hrs	₹ 6,500
NMG-DP-04	Maltodextrin Powderization	Converting high-fat liquids into free-flowing edible powders.	7 hrs	₹ 3,500
NMG-DP-05	Spray Drying	Atomising liquid into fine dry powder for instant rehydration.	11 hrs	₹ 8,000
NMG-DP-06	Centrifugation	Density-based separation for clarified juices and concentrated flavor fractions.	8 hrs	₹ 5,000
NMG-DP-07	Ultrafiltration	Membrane separation by molecular size for selective clarification.	10 hrs	₹ 7,000
NMG-DP-08	Reverse Osmosis Concentration	Pressure-driven water removal that preserves heat-sensitive volatiles.	10 hrs	₹ 7,500

CODE	PROTOCOL	DESCRIPTION	DURATION	FEE (INR)
NMG-IA-01	Whipper Rapid Infusion	Pressurised N ₂ O infusion for instant flavored liquids in minutes.	7 hrs	₹ 3,500
NMG-IA-02	Vacuum Infusion	Negative-pressure absorption of flavors into porous ingredients.	8 hrs	₹ 4,500
NMG-IA-03	Sous-vide Aromatization	Aromatic-enhanced low-temperature infusion during vacuum cooking.	8 hrs	₹ 4,500
NMG-IA-04	CO ₂ Carbonation	Direct carbonation of liquids using soda siphons or carbonation systems.	7 hrs	₹ 3,500
NMG-IA-05	Carbonated Fruit	Whole fresh fruits pressurised with CO ₂ for an effervescent bite.	7 hrs	₹ 4,000
NMG-IA-06	Cold Smoking (Smoke Gun)	Cool aromatic smoke applied without heat to delicate ingredients.	7 hrs	₹ 3,500
NMG-IA-07	Hot Smoking	Heat combined with smoke for cooked, smoke-flavored proteins.	8 hrs	₹ 4,500
NMG-IA-08	Aroma Recovery	Capturing and re-introducing volatile aromas lost during cooking.	10 hrs	₹ 7,000
NMG-IA-09	Headspace Capture	Trapping vapor aromas under cloches for tableside release.	9 hrs	₹ 5,500
NMG-IA-10	Hydrosol & Essence Distillation	Pot and fractional distillation of edible flavor waters.	11 hrs	₹ 7,500
NMG-IA-11	Microencapsulation	Tiny edible flavor capsules that burst dramatically on the palate.	11 hrs	₹ 8,000

07

CATEGORY · NMG-EZ

Enzymatic & Fermentation

Transglutaminase, koji and lacto-fermentation

10

PROTOCOLS

CODE	PROTOCOL	DESCRIPTION	DURATION	FEE (INR)
NMG-EZ-01	Transglutaminase Protein Binding	Enzymatic bonding of proteins to fuse meats, fish or plant proteins.	8 hrs	₹ 5,500
NMG-EZ-02	Protease Tenderization	Enzymatic breakdown of tough proteins for controlled tenderness.	7 hrs	₹ 3,500
NMG-EZ-03	Lactase Modification	Lactose conversion for naturally sweeter, lactose-free dairy.	7 hrs	₹ 3,500
NMG-EZ-04	Pectinase Juice Clarification	Enzymatic breakdown of pectin yielding crystal-clear juices.	8 hrs	₹ 4,500
NMG-EZ-05	Amylase Saccharification	Starch-to-sugar conversion for sweeteners and fermentation substrates.	8 hrs	₹ 4,500
NMG-EZ-06	Lacto-Fermentation	Salt-driven LAB fermentation of vegetables, fruits and grains.	9 hrs	₹ 4,500
NMG-EZ-07	Koji Cultivation (A. oryzae)	Mold cultivation for amylase- and protease-rich substrates.	12 hrs	₹ 7,000
NMG-EZ-08	Modern Garum Production	Koji-driven enzymatic fermentation of fish or alternative proteins.	12 hrs	₹ 7,500
NMG-EZ-09	Miso & Shio Koji Making	Fermented bean & grain pastes and salted koji marinades.	11 hrs	₹ 6,500
NMG-EZ-10	Kombucha & Vinegar Fermentation	SCOBY-based and mother-of-vinegar acetic acid fermentations.	10 hrs	₹ 5,500

08

CATEGORY · NMG-EA

Energy-Assisted Techniques

Sound, light, electricity and magnetism in cooking

9

PROTOCOLS

CODE	PROTOCOL	DESCRIPTION	DURATION	FEE (INR)
NMG-EA-01	Ultrasonic Preparation	Ultrasonic waves to accelerate infusion and modify food texture.	9 hrs	₹ 6,500
NMG-EA-02	Sonic Ageing	Sound waves used to rapidly mature spirits or tenderize meats.	9 hrs	₹ 6,500
NMG-EA-03	Sonic Seasoning	Carefully matched audio used to shift taste perception during eating.	8 hrs	₹ 5,500
NMG-EA-04	Electrospinning	Voltage-spun edible nanofibers used to create novel textures.	13 hrs	₹ 12,000
NMG-EA-05	Laser Cooking & Charring	Precision laser heating for pinpoint cooking and edible patterns.	12 hrs	₹ 11,000
NMG-EA-06	UV Photo-Flavoring	Ultraviolet light used to develop or transform flavors and aromas.	10 hrs	₹ 7,500
NMG-EA-07	Electrogustometry	Electrical stimulation of taste receptors to alter sensory perception.	11 hrs	₹ 9,500
NMG-EA-08	Magnetic Levitation Plating	Floating garnishes or vessels via controlled magnetic suspension.	9 hrs	₹ 6,500
NMG-EA-09	Cymatic Plating	Sound-vibration patterning of liquids for striking visual effect.	10 hrs	₹ 7,000

CODE	PROTOCOL	DESCRIPTION	DURATION	FEE (INR)
NMG-CC-01	pH Manipulation & Acid Balancing	Controlled acid or alkali use for color, texture and microbial stability.	8 hrs	₹ 4,500
NMG-CC-02	Maillard Acceleration	Alkaline-assisted rapid browning and deep flavor development.	7 hrs	₹ 3,500
NMG-CC-03	Caramelisation Profiling	Staged sugar pyrolysis producing layered, complex caramel notes.	8 hrs	₹ 4,500
NMG-CC-04	Oxidation & Browning Control	Ascorbic acid and vacuum packing to prevent unwanted discoloration.	7 hrs	₹ 3,500
NMG-CC-05	Chocolate Tempering	Crystal-controlled cocoa butter for high shine, clean snap and stability.	9 hrs	₹ 5,500
NMG-CC-06	Isomalt Sugar Glass	Heat-stable transparent sugar substitute for decorative showpieces.	9 hrs	₹ 5,500
NMG-CC-07	Pulled & Blown Sugar	Sculpted and aerated sugar work for plated and standalone showpieces.	11 hrs	₹ 7,500
NMG-CC-08	Cocoa Butter Shell Casting	Tempered chocolate molds for hollow filled spheres and bonbons.	10 hrs	₹ 6,500

10

CATEGORY · NMG-MS

Multi-Sensory & Perceptual Design

Crossmodal design, optical illusion and taste perception

10

PROTOCOLS

CODE	PROTOCOL	DESCRIPTION	DURATION	FEE (INR)
NMG-MS-01	Flavor Layering	Building complex flavor profiles through carefully sequenced ingredients.	8 hrs	₹ 4,500
NMG-MS-02	Liquid Layering	Density-stacked liquids creating visually striking cocktails and dishes.	7 hrs	₹ 3,500
NMG-MS-03	Chromatic Flavor Matching	Aligning color and taste to guide and shape diner perception.	8 hrs	₹ 4,500
NMG-MS-04	Multi-Sensory Pairing	Designing dishes that engage sight, sound, aroma and touch together.	9 hrs	₹ 5,500
NMG-MS-05	Dynamic Contrast	Same-bite contrasts of temperature, texture, flavor and aroma.	8 hrs	₹ 4,500
NMG-MS-06	Optical Flavoring	Visual illusions and plating techniques that suggest specific tastes.	8 hrs	₹ 4,500
NMG-MS-07	Flavor Tripping (Miraculin)	Miracle berry to temporarily transform sour foods into sweet experiences.	7 hrs	₹ 4,000
NMG-MS-08	Thermo-Reversible Transformation	Ingredients that change state or texture during the act of eating.	9 hrs	₹ 5,500
NMG-MS-09	Edible Mist & Vapor Plating	Aromatic mists released tableside under cloches and domes.	8 hrs	₹ 4,500
NMG-MS-10	Crossmodal Correspondences	Shape, weight and sound-to-taste design principles applied to plating.	10 hrs	₹ 6,500

11

CATEGORY · NMG-CD

Computational & Digital Cuisine

Data, printing and augmented dining experiences

5

PROTOCOLS

CODE	PROTOCOL	DESCRIPTION	DURATION	FEE (INR)
NMG-CD-01	Algorithmic Cooking	Data-driven optimization of ingredient combinations and methods.	11 hrs	₹ 8,500
NMG-CD-02	Food-Pairing Database Design	Aroma-compound matching for unexpected, scientifically validated pairings.	10 hrs	₹ 7,500
NMG-CD-03	3D Food Printing (Extrusion)	Layered edible structures via syringe and extruder printing systems.	13 hrs	₹ 14,000
NMG-CD-04	Edible Inkjet Printing	Printing edible images and patterns onto wafer paper or icing.	10 hrs	₹ 9,000
NMG-CD-05	Augmented-Reality Plating	AR overlays that transform and extend the dining experience.	11 hrs	₹ 11,000

12

CATEGORY · NMG-FR

Frontier & Sustainable Ingredients

Precision fermentation, alt-proteins and edible bioplastics

5

PROTOCOLS

CODE	PROTOCOL	DESCRIPTION	DURATION	FEE (INR)
NMG-FR-01	Whey & By-Product Utilisation	Up-cycling whey, peels and trim into rich flavor bases.	8 hrs	₹ 4,500
NMG-FR-02	Insect Protein Integration	Edible-insect flours and proteins incorporated into modernist dishes.	9 hrs	₹ 5,500
NMG-FR-03	Plant-Cell Culture Flavoring	Lab-grown plant cells as next-generation flavor and ingredient sources.	15 hrs	₹ 16,000
NMG-FR-04	Precision Fermentation	Microbe-produced proteins such as dairy and egg analogues.	17 hrs	₹ 18,000
NMG-FR-05	Edible Bioplastics & Seaweed Films	Algae- and seaweed-based edible packaging and serving films.	11 hrs	₹ 8,500

ENROL · LEARN · CREATE

Build a Career in Modern Culinary Science

Every protocol in this catalogue is delivered as hands-on training on working equipment — covering ingredient science, equipment operation, technique mastery, food-safety compliance and creative plating. Protocols can be combined into custom tracks that fit individual career goals or institutional training requirements.

110 training protocols

12 technology streams

993 total training hours

Unique **product code** for every protocol

NTHRYS OPC PVT LTD

MOLECULAR GASTRONOMY TRAINING CENTRE