

Table 4.1 An overview of natural shelf-life ingredients in food applications

Products	Main functionalities	Dosage (w/w)	pH range	Bakery	Beverage	Culinary	Confectionery	Dairy	Oils & fats	Fruits & Vegetables	Meat, Poultry & Seafood
Natap® Natalac® Natasan® Natamycin	Anti-yeasts and molds	10-40 mg/kg	3-9	Baked goods, soft tortillas, mooncakes	Beer, juice, wine	Condiments, canned foods, salad dressing,		Cheese, yoghurt, sour cream		Fresh fruits, mushrooms	Cooked cured meat, dried meat products, fermented meat
Epolyly® ε-Polylysine	Anti-fungi & bacteria	50-150 mg/kg	4-8	Bakery		Culinary	Sweet syrups and toppings	Cheese, cream, yoghurt	Peanut butter, butter spreads	Fruits & vegetables	Fish, shellfish, meat substitute
NisinA® / NisinZ® Nisin	Inhibit Gram-positive bacteria	50-250 mg/kg	2.5-6.5	Crumpets	Juices, beer, wine, spirits	Canned meals, condiments, RTE soups and broths, liquid egg products		Cheese, cream, fermented milk			Cooked meat,
Lyosch® Lysozyme	Anti-bacteria	2-80 mg/kg	4-8		Wine			Cheese			
Befresh™ Protective cultures	Anti- <i>Clostridium</i> , yeast and mould	10-20 u/1000 kg	3.5-7.0					Yoghurt, sour cream, cheese			
Proteria® Fermentates	Anti-fungi & bacteria	3-25 g/kg	2-9	Bread, dough products		Sauces, dips, dressing					Raw and cooked meal and poultry
PhageX® Bacteriophage	Anti- <i>Listeria</i> , <i>Salmonella</i> , <i>E. coli</i> O157	10-20 mg/kg	4-7								Fresh poultry, beef carcass, RTE meats.
Plantéria® Plant extracts	Anti-fungi & bacteria	1-2 g/kg	3-9	Cakes	Fruit juice concentrate, water-based drinks	RTE soups and broths, emulsified sauces, salads	Sweet syrup and toppings	Cheese, yoghurt, pudding		Fresh salad, fruit fillings for pastries	
Mushria™ Mushroom extracts	Anti-fungi & bacteria	1-10 g/kg	3-9		Soft drinks						
Chitoly™ Fungal chitosan	Coating	1-10 g/kg	3-9		Juice and juice drinks	Soy sauce				Post-harvest fruits, fresh (cut) fruits & vegetables	Fresh ground meat, fresh sausages
Guardox™ Antioxidant extracts	Delay of oxidative rancidity	10-40 mg/kg	3-9	Snacks, biscuit	Soft drinks, beer, juices	French fries, crisps, mayonnaise, hamburger			Reduced fat-spreads, margarine, shortening, edible oils, fat-based filling	Apple jam	Cooked (cured) meat, sausage, RTE meat
White Fiber™ Moisture retention fibers	Moisture retention	20-40 g/kg	3-11	Biscuits, bun, rolls, cookies & brownies, pie dough, pizza dough, pita bread		Marinades					Frozen meats, cooked meat
Antibraun™ Anti-browning extracts	Anti-browning	50-150 mg/kg	4-8							Fresh-cut fruits	
Koatilm™ Chitosan-based coating	Anti-fungal decay	2-20 mg/kg	-							Post-harvest fruits and vegetables	
Fixolor™ Color stabilizers	Color stabilization	5-500 mg/kg	3-9		Juice concentrate						Cooked meat and poultry, sausages
Antimix™ Antimicrobial blends	Anti-fungi & bacteria	0.3-10 g/kg	3-9			Dips, dressings, sauces					
ShelfeX® Shelf-life extenders	Prevent microbial and oxidative spoilage	50-2000 mg/kg	3-11								Fresh meat, fresh sausages
Antipack® Active antifungal packaging	Anti-mould	/	3-9					Hard cheese			Dried sausages