

**Supplementary Material**

**Revisiting the Concepts of Prebiotic and Prebiotic Effect in Light of Scientific and Regulatory Progress – A Consensus Paper from the Global Prebiotic Association (GPA)**

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**Table of Contents**

- **Supplemental Table 1.** Health Benefit Examples of Established, Novel, and Emerging Prebiotics in Animals
- **Supplemental References.**

**Supplemental Table 1: Health Benefit Examples of Established, Novel, and Emerging Prebiotics in Animals.**

Prebiotic Type	Established/ Novel/ Emerging*	Health Effect/Benefit	Dosage (per day) and Formulation (Animal Model)	Outcome	Reference
Acacia Gum	Established	Renal toxicity	7.5 g/kg in oral gavage (Rat)	Reverses and prevents mercury-induced degenerative changes of the kidneys	(1)
		Renal function	20 g/kg body weight (Mouse)	Increases creatine clearance and alters electrolyte excretion	(2)
Amino Acids	Emerging	Immunity	Basal diet (containing 0.93% or 0.5% L-arginine g/g (Mouse)	Gut microbiome modulation and innate immunity activation	(3)
Botanicals (e.g., Fenugreek)	Emerging	Obesity	150 mg/kg body weight (Rat)	Anti-obesogenic properties	(4)
Fructooligosaccharides (FOSs)	Established	Metabolic disorders	0.3 g in tap water (Mouse)	Gut microbiome modulation	(5)
		Non-alcoholic steatohepatitis	5% FOS in drinking water (Mouse)	Gut microbiome modulation	(6)
Galactooligosaccharides (GOSs)	Established	Infection	1% w/w GOS in diet (Chicken)	Cecal microbiome modulation	(7)
Inulin	Established	Infection	0.5% or 1.0% inulin supplemented diet (Chicken)	Decreases the proinflammatory response and enhances mucosal immunity	(8)
		Hepatic steatosis	N/A (Rat)	Restores intestinal barrier integrity, rehabilitated lipogenesis regulators, and attenuated steatosis phenotypes	(9)
		Breast cancer	Diet pellets supplemented with 8% (wt:wt), 10% (wt:wt), and 15% (wt:wt) inulin (Mouse)	Suppresses tumorigenesis, modulates microbial composition, and increases plasma propionic acid level that affect gene expression, cell proliferation, and cell survival	(10)

Omega-3 Fatty Acids	Novel	Stress	1.25% Fish oil or 3.12% microalgae supplemented soybean meal (Piglet)	Reduces inflammatory response	(11)
		Obesity	N/A (transgenic model with endogenous omega-3)	Improves antibiotic-induced gut dysbiosis	(12)
Polyphenols	Novel	Obesity	Grape powder (5% w/w) (Mouse)	Various effects on the metabolic consequences	(13)
			0.5% polymeric procyanidins (dose undeclared) (Mouse)	Regulation of lipid metabolism-associated genes and gut microbiota	(14)
		Influenza infection	N/A (Mouse)	Enhances type I interferon (IFN) signaling	(15)
		Chronic diseases	50 mg/kg berry extract in water solutions (Mouse)	Improves antioxidant status	(16)
Resistant Starch (RS)	Established	Eye health	Low glycemic diet with RS vs. High glycemic starch control (Mouse)	Reduces age-related macular degeneration	(17)
		Immune function	20% w/w high amylose maize RS (Mouse)	Modifies the intestinal microbiota, stimulates intestinal immunity and endocrine-responses, and modifies systemic metabolomes	(18)
		Chronic kidney disease	59% w/w high amylose maize-RS type 2 (HAMRS2) (Rat)	Gut microbiome and metabolomic profile modulation	(19)
Xylans	Established	Hypercholesterolemia	5 g/kg arabinoxylan in diet (Hamster)	Reduces cholesterol levels	(20)
		Immune function	6 g/kg isomalto-oligosaccharide supplemented diet (Pig)	Regulates gut microbiota and strengthens immune function	(21)
		Obesity	10% w/w arabinoxylan in high-fat diet (dose undeclared) (Mouse)	Decreases fecal markers of inflammation	(22)

Yeast Hydrolysates	Emerging	Growth efficiency	0.05% or 0.1% yeast hydrolysate supplemented diet (Pig)	Enhances growth performance, nutrient digestibility, and <i>Lactobacillus</i> count	(23)
		Performance	2g /kg yeast derivatives supplemented diet (Pig)	Gut microbiome modulation	(24)
Fungal Glycans	Emerging	Obesity	3 or 5 g/kg $\beta$ -glucan in high-fat diet (HFD) (Mouse)	Regulates gut microbiota and ameliorates HFD-induced hepatic stress, colonic motility, and intestinal atrophy	(25)

\*Established: Introduced with the discovery of prebiotics category or shortly after and have been extensively studied for prebiotic effect.

Novel: Discovered recently and is increasingly researched as a prebiotic.

Emerging: Discovered recently and research is underway for its potential as a prebiotic.

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