

DEFINITIONS AND GENERAL REFERENCES					
Citation	Keyword	Year	Remarks		
1. Anonymous (2001). Health and nutritional properties in food including powder milk with live lactic acid bacteria. Food and Agriculture Organization of the United Nations & World Health Organization, 34p. http://www.who.int/foodsafety/publications/fs_management/en/probiotics.pdf ; Retrieved 2012-03-04.	probiotics	2001	definitions		
2. Anonymous (2010). The state of world fisheries and aquaculture 2010. Food and Agriculture Organisation of the United Nations, Rome, 218 p. ISBN: 978-92-5-106675-1.	statistics and policy	2010	general references		
3. Dohoo I, Martin WS and Stryhn H (2008). Veterinary Epidemiological Research, 2. ed. VER Inc, Charlottetown, Prince Edwards Island, Canada, 865 pp. ISBN: 978-0-919013-60-5.	epidemiology, biostatistics	2008	reference		
4. Fuller R (1989). Probiotics in man and animals. J. Appl. Bacteriol. 66:365-378.	probiotics	1989	definitions		
5. Georgiadis MP, Gardner IA and Hedrick RP (2001). The role of epidemiology in the prevention, diagnosis, and control of infectious diseases of fish. Preventive Veterinary Medicine 48 (4,)287-302	epidemiology biostatistics	2001	general references		
6. Gibson GR, Probert HM, Loo JV, Rastall RA and Roberfroid MB (2004). Dietary modulation of the human colonic microbiota: updating the concept of prebiotics. Nutr. Res. Rev. 17, 259–275.	prebiotics	2004	definitions		
7. Gibson GR and, Roberfroid MB (1995). Dietary modulation of the human colonic microbiota: introducing the concept of prebiotics. J. Nutr. 125, 1401–1412.	prebiotics	1995	definitions		
8. Twibell RG and Wilson RP (2004). Preliminary evidence that cholesterol improves growth and feed intake of soybean meal-based diets in aquaria studies with juvenile channel catfish, <i>Ictalurus punctatus</i> . Aquaculture 236, 539-546.	soya bean enteritis	2004	general references		
9. Manning TS and Gibson GR (2004). Prebiotics. Best Pract. Res. Clin. Gastroenterol. 18, 287-298.	prebiotics	2004	definitions		
10. Aunsmo A, Bruheim T, Larsen RB, Romstad S, Sandberg M and Skjerve E (2008). Methods for investigating patterns of mortality and quantifying cause-specific mortality in sea-farmed Atlantic salmon <i>Salmo salar</i> . Diseases of Aquatic Organisms 81, 99-107.	epidemiology statistics	2012	general references		
11. Roberfroid MB (2007). Prebiotics: the concept revisited. Journal of Nutrition 137; 830 S	prebiotics	2007	definitions		
12. Salminen S, Ouwehand AC, Benno Y and Lee YK (1999). Probiotics how should they be defined. Trends in Food Science Technol.10:107-110.	probiotics	1999	definitions		
13. FAO/WHO (2002). Guidelines for the Evaluation of Probiotics in Food. London, Ontario, Canada, 11 p.	probiotics	2002	general references		
14. Thrusfield M (2007). Veterinary Epidemiology, 3 rd ed. Blackwell, Oxford, UK, 584p. ISBN. 978-0-632-06397-0.	epidemiology/ biostatistics	2007	reference		

REVIEW PAPERS					
Citation	Subject category	Year	Remarks		
15. Blazer VS (1992). Nutrition and disease resistance in fish. Ann Rev Fish Dis 1, 309-323.	general nutrition	1992	review		
16. Blazer VS (1991). Piscine macrophages function and nutritional influences: a review. J Aquat. Animal Health 3, 77-86.	general nutrition	1991	review		
17. Gatlin III DM (2002). Nutrition and fish health. In: Halver JE, Hardy RW (eds): Fish Nutrition.	general	2002	review		

Academic Press, San Diego, pp. 671-702.		nutrition			
18. Landolt ML (1989). The relationship between diet and the immune response of fish. <i>Aquaculture</i> 79, 193-206. Bossier		general nutrition		1989	review
19. Lim C and Webster CD, eds. (2001): <i>Nutrition and Fish Health</i> . Food Products Press, Birmingham, New York, 365 pp.		general nutrition		2001	review
20. Nakagawa H, Sato M, Gatlin III DM (2007). Dietary supplements for the health and quality of cultured fish. CABI publications, Oxford, UK, 244 p		general nutrition		2007	review
21. Olivia-Teles A (2012). Nutrition and health of aquaculture fish. <i>Journal of Fish Diseases</i> 35, 83-108.		general nutrition		2012	review
22. Sealey WM and Gatlin DM III (2001). Overview of nutritional strategies affecting the health of marine fish. In: Lim C and Webster CD (eds): <i>Nutrition and Fish Health</i> . Food Products Press, Birmingham, New York, pp. 103-118.		general nutrition		2001	review
23. Verlhac Trichet V (2010). Nutrition and immunity: an update. <i>Aquaculture Research</i> 41, 356-372.		general nutrition		2010	review
24. Waagbø R (1997). The impact of nutritional factors on the immune system in Atlantic salmon, <i>Salmo salar</i> L.: A review. <i>Aquacult Fish Manag</i> 25, 175-197.		general nutrition		1997	review
25. Waagbø R (2006). Feeding and disease resistance in fish. Chap. 13 in: Mosenthin J, Zentek R and Zebrowska T (eds), <i>Biology of growing animals</i> , Elsevier Ltd, Amsterdam, pp. 387-415.		general nutrition		2006	review
26. Dalmo RA and Børgwald J (2008). Beta-glucans as conductors of immune symphonies. <i>Fish & Shellfish Immunology</i> 25, 384-396.		Glucans, MOS		2008	review
27. Dalmo RA (2000). Immunostimulatory $\beta(1,3)$ -D-glucans: prophylactic drugs against threatening infectious diseases in fish. In: Paulsen, B.S. (Ed.), <i>Bioactive Carbohydrate Polymers</i> . Proceedings of the Phytochemical Society of Europe Kluwer. Academic Publishing, Dordrecht, pp. 95– 106.		Glucans, MOS		2000	review
28. Robertsen B (1999). Modulation of the non-specific defence of fish by structurally conserved microbial polymers. <i>Fish Shellfish Immunol</i> , 9, 269-290.		Glucans, MOS		1999	review
29. Robertsen B, Engstad RE and Jørgensen JB (1994). β -glucans as immunostimulants in fish. Pages 83-99 in J.S. Stolen and T.C. Fletcher, eds, <i>Modulators of Fish Immune Responses</i> . Volume 1. Fair Haven, NJ, SOS Publications.		Glucans, MOS		1994	review
30. Raa J, Rørstad G, Engstad R, Robertsen B (1992). The use of immunostimulants to increase resistance of aquatic organisms to microbial infections. <i>Diseases in Asian Aquaculture I</i> ; pp39-50.		Glucans, MOS		1992	review
31. Soltanian S, Stuyven E, Cox E, Sorgeloos P and Bossier P (2009). Beta-glucans as immunostimulants in vertebrates and invertebrates. <i>Crit Rev. Microbiol.</i> , 35, (2) 109-138		Glucans, MOS		2009	review
32. Chakraborty BS and Hancz C (2011). Application of phytochemicals as immunostimulant, antipathogenic and antistress agents in finfish culture. <i>Reviews in Aquaculture</i> 3:103-119.		herbs		2011	review
33. Chitarasu T (2010). Herbal biomedicines: a new opportunity for aquaculture industry. <i>Aquaculture International</i> 18; 403-414.		herbs		2010	review
34. Düğenci SK, Arda N and Candan A (2003). Some medicinal plants as immunostimulants for fish.		herbs		2003	review

J. Ethnopharmacology 88, 99-106.					
35. Harikrishnan H, Chellam Balasundaram C and Heo MS (2011). Impact of plant products on innate and adaptive immune system of cultured finfish and shellfish. <i>Aquaculture</i> 317: 1-15.		herbs		2011	review
36. Jeney G, Yin G, Ardó L and Jeney Z (2009). The use of immunostimulating herbs in fish. An overview of research. <i>Fish Physiology and Biochemistry</i> 35; 669-676.		herbs		2009	review
37. Anderson DP (1997). Adjuvants and immunostimulants for enhancing vaccine potency in fish. <i>Dev Biol Stand</i> 90, 257–265.		imm.stimul.		1997	review
38. Anderson DP (1992). Immunostimulants, adjuvants, and vaccine carriers in fish: application to aquaculture. <i>Ann Rev Fish Dis</i> 2, 281-307.		imm.stimul.		1992	review
39. Azad IS, Panigrahi AK, Dalmo RA and Shankar KM (2007). Oral delivery of immunogens in aquaculture. Nova Science Publishers, Inc. ISBN 978-1-60456-247-7. 92 p.		imm.stimul.		2007	review
40. Bricknell IR and Dalmo RA (2005). The use of immunostimulants in fish larval aquaculture. <i>Fish Shellfish Immunol</i> 19: 457-472.		imm.stimul.		2005	review
41. Galeotti M (1998). Some aspects if the application of immunostimulants and a critical review of methods for their evaluation. <i>Journal of Applied Ichthyology</i> 14, 189-199.		imm.stimul.		1998	review
42. Gallindo-Villegas J and Hosokawa H (2004). Immunostimulants: Towards temporary prevention of diseases in marine fish. In: Cruz Suárez, LE, Ricque Marie D, Nieto López MG, Villarreal D, Scholz U and González M (2004). <i>Advances en Nutrición Acuicola VII</i> . Memorias del VII Simposium Internacional de Nutrición Acuicola. 16-19 Nov. 2004. Hermosillo, Sonora, México.		imm.stimul.		2004	review
43. Ganguly S, Paul I and Kumar Mukhopadhyay S (2010). Application and effectiveness of immunostimulants, probiotics and prebiotics in aquaculture, a review. <i>Bamidgeh – the Israeli Journal of Aquaculture</i> 62 (3), 130-138.		imm.stimul.		2010	review
44. Gannam AL and Shrock RM (2001). Immunostimulants in fish diets. In: Lim C and Webster CD (eds): <i>Nutrition and Fish Health</i> . Food Products Press, Birmingham, New York, pp. 235-266.		imm.stimul.		2001	review
45. Gannam AL and Schrock RM (1999). Immunostimulants in fish diets. <i>J Appl. Aquaculture</i> 9(4), 53-89.		imm.stimul.		1999	review
46. Raa J (2001). The mode of action and use of immunstimulants in fish and shellfish farming. In: J. Coimbra (Ed.) <i>Modern Aquaculture in the Coastal Zone</i> , IOS Press, Amsterdam, pp 181-196. ISBN: 0-9673355-6-6.		imm.stimul.		2001	review
47. Raa J (1996). The use of immunostimulatory substances in fish and shellfish farming. <i>Rev Fish Sci</i> 4(3), 229-288.		imm.stimul.		1996	review
48. Sakai M (1999). Current research status of fish immunostimulants. <i>Aquaculture</i> 172, 63–92.		imm.stimul.		1999	review
49. Sohn KS, Kim MK, Kim JD and Han IK (2000). The role of immunostimulants in monogastric animal and fish – review. <i>Asian-Australasian J. Anim. Sci.</i> 13, 1178-1187.		imm.stimul.		2000	review
50. Swicki AK, Morand M, Terech-Majewska E, Niemczuk W, Kazuń K and Glabski E (1998). Influence of immunostimulants on the effectiveness of vaccines in fish: <i>in vitro</i> and <i>in vivo</i> study. <i>J. Appl. Ichthyol</i> 14:225-227.		imm.stimul.		1998	review

51. Balfry SK and Higgs DA (2001). Influence of dietary lipid composition on the immune system and disease resistance in finfish. In: Lim C and Webster CD (eds): Nutrition and Fish Health. Food Products Press, Birmingham, New York, pp. 213-234.		lipids		2002	review
52. Kiron V, Fukuda H, Takeuchi T and Watanabe T (1995). Essential fatty acid nutrition and defence mechanisms in rainbow trout <i>Oncorhynchus mykiss</i> . Comp Biochem Physiol 111A, 361-367.		lipids		1995	review
53. Li P and Gatlin III DM (2006). Nucleotide nutrition in fish: Current knowledge and future applications. Aquaculture 251, 141-152.		nucleotides		2006	review
54. Tassaka ACMAR and Sakai M (2005). Current research on the immunostimulatory effects of CpG oligodeoxynucleotides in fish. Aquaculture 246, 25-36.		nucleotides		2005	review
55. Burr, Gatlin III DM and Ricke S (2005). Microbial ecology of the gastrointestinal tract of fish and the potential application of prebiotics and probiotics in finfish aquaculture. Journal of the World Aquaculture Society 36, 425-436.		prebiotics probiotics		2005	review
56. Gupta SK, Das P, Singh SK, Akhtar MS, Meena DK and Mandal SC (2011). Microbial levan, an ideal prebiotic and immunonutrient in aquaculture. World Aquaculture March 2011, p. 61-66.		prebiotics		2011	review
57. Havenaar, R, Bonnin-Marol S, Van Dokkum W, Petitet S and Schaafsma G. (1999). Inulin: fermentation and microbial ecology in the intestinal tract. Food Rev. Intern. 15, 109-120.		prebiotics		1999	review
58. Kelly G (2008). Inulin-type prebiotics: a review. Part 1. Alternat. Med. Review 13 (4), 315-329.		prebiotics		2009	review
59. Kelly G (2009). Inulin-type prebiotics: a review. Part 2. Alternat. Med. Review 14 (1), 36-55.		prebiotics		2009	review
60. Merrifield DL, Dimitroglou A, Foey A, Davies JS, Baker, RTM, Børgwald J, Castex M and Ringø E (2010). The current status and future focus of prebiotics and prebiotic applications for salmonids. Aquaculture 302: 1-18.		prebiotics probiotics		2010	review
61. Niness, KR (1999). Inulin and oligofructose: what are they? J. of Nutrition 129, 1402-1406.		prebiotics		1999	review
62. Ringø E, Olsen RE, Gifstad TG, Dalmo RA, Amlund H, Hemre G-I and Bakke AM (2010). Prebiotics in aquaculture: a review. Aquaculture Nutrition 16 (2), 117-136.		prebiotics		2010	review
63. Wang Y (2009). Prebiotics: present and future in food science and technology. Food Res. Intern. 42:8-12.		prebiotics		2009	review
64. Yousefian M and Amiri MS (2009). A review of the use of prebiotics in aquaculture for fish and shrimp. African Journal of Biotechnology 8, 7313-7318.		prebiotics		2009	review
65. Balcázar JL, de Blas I, Ruiz-Zarzuola I, Vendrell D and Muzquiz, JL (2004). Probiotics: a tool for the future of fish and shellfish health management. J. Aquacult. Trop. 19, 239-242.		probiotics		2004	review
66. Balcázar JL, de Blas I, Ruiz-Zazuola I, Cunningham D, Vendrell D and Muzquiz, JL (2006a). The role of probiotics in aquaculture. Vet. Microbiol. 114, 173-186.		probiotics		2006	review
67. Balcázar JL, Decamp O, Vendrell D, de Blas I and Ruiz-Zarzuola I (2006b). Health and nutritional properties of probiotics in fish and shellfish. Microb. Ecol. Health Dis. 18, 65-70.		probiotics		2006	review
68. Dimitroglou A, Merrifield DL, Carnevali O, Picchiatti S, Avella M, Daniels C, Guroy D and Davies JS (2011). Microbial manipulations to improve fish health and production – A Mediterranean perspective. Fish & Shellfish Immunol 30: 1-16.		probiotics		2011	review

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70. Gatesoupe F-J (2007). Live yeasts in the gut: natural occurrence, dietary introduction, and their effects on fish health and development. <i>Aquaculture</i> 267, 20–30.		probiotics		2007	review
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72. Gildberg A and Raa J (1995). Probiotisk effekt av bakterier i fôr til marin fisk. Norsk institutt for fiskeri og havbruk: Tromsø. 16pp.		probiotics		1995	review
73. Gomez GD and Balcazar JL (2008). A review on the interactions between gut microbiota and innate immunity of fish. <i>FEMS Immunol.Med Microbiol.</i> , 52, 145-154		probiotics		2008	review
74. Irianto A and Austin B (2002a). Probiotics in aquaculture. <i>J. Fish Dis.</i> 25, 633–642.		probiotics		2002	review
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76. Moriarty D (1997). The role of microorganisms in aquaculture ponds. <i>Aquaculture</i> 151:333–349.		probiotics		1997	review
77. Nayak SK (2010). Probiotics and immunity: A fish perspective. <i>Fish & Shellf. Immunol.</i> 29, 2-14.		probiotics		2010	review
78. Nikoskelainen S, Salminen S, Bylund G and Ouwehand A (2001). Characterisation of the properties of human and dairy-derived products for prevention of infectious diseases in fish. <i>Applied Environmental Microbiology</i> 67, 2430-2435.		probiotics		2001	review
79. Ringø E, Løvmo L, Kristiansen M, Salinas I, Myklebust R, Olsen RE and Mayhew TM (2010). Lactic acid bacteria vs. pathogens in the gastrointestinal tract of fish: a review. <i>Aquaculture Research</i> 41:451-467.		probiotics		2010	review
80. Ringø E and Gatesoupe FJ (1998). Lactic acid bacteria in fish: a review. <i>Aquaculture</i> 160, 177-203.		probiotics		1998	review
81. Ringø E (2004). <i>Lactic acid</i> bacteria in fish and fish farming. In: S. Salminen, A. Ouwehand and A. and von Wrieth (eds): <i>Lactic Acid Bacteria</i> ,. Marcel Dekker Inc., New York, pp. 581–610.		probiotics		2004	review
82. Swanson KS, Grieshop CM, Flickinger EA, Bauer IL, Wolf BW, Chow J, Garleb KA, Sweetman JW, Torrecillas S, Dimitroglou A, Rider S, Davies SJ and Izquierdo MS (2010). Enhancing the natural defences and barrier protection of aquaculture species. <i>Aquaculture Research</i> 41, 345-355.		probiotics glucans		2010	review
83. Vadstein O, Mo TA and Bergh Ø (2004). Microbial interactions, prophylaxis and diseases. In: Moksness, Kjørsvik, Olsen (eds.): <i>Culture of cold-water marine fish</i> . Oxford Blackwell Publishing Ltd.; p 28-64.		probiotics		2004	review
84. Vershuere L, Rombaut G, Sorgeloos P and Verstraete W (2000). Probiotic bacteria as biological control agents in aquaculture. <i>Microbiol. Mol. Biol. Rev.</i> 64, 655–671.		probiotics		2000	review
85. Wang Y-B, Li J-R and Lin J (2008). Probiotics in Aquaculture: Challenges and outlook. <i>Aquaculture</i> , 281:1-4.		probiotics		2008	review
86. Yazdankhan SP (2002). Probiotika: Mikrobiologiske og funksjonelle aspekter. <i>Norsk Veterinærtidsskrift</i> , 4:389-394.		probiotics		2002	review

87. Verlhac V and Gabaudan, J (1997). Influence of vitamin C on the immune response of salmonids. <i>Aquaculture & Fisheries Management</i> 25, 316-323.		vitamins		1994	review
88. Waagbø R (2010). Water-soluble vitamins in fish ontogeny. <i>Aquaculture Research</i> 41, 733-744.		vitamins		2010	review
CELL WALL POLYSACCHARIDES (Glucans, MOS, inactivated yeasts)					
Citation	Species	Ingredient/ Additive	Outcomes measured	Year	Remarks
89. Bridle AR, Carter CG, Morrison RN and Nowak BF (2005). The effect of beta-glucan administration on macrophage respiratory burst activity and Atlantic salmon, <i>Salmo salar</i> L., challenged with amoebic gill disease-evidence of inherent resistance. <i>Fish & Shellfish Imm</i> 28, 347-356.	AS	unidentified β -glucans	survival immune parameters	2005	
90. Dalmo RA, Bøgwald J, Ingebrigtsen K and Seljelid R (1996). The immunomodulatory effect of laminaran (β -1,3-D-glucan) on Atlantic salmon, <i>Salmo salar</i> L., anterior kidney leucocytes after intraperitoneal, peroral and peranal administration. <i>J Fish Dis</i> 19, 449-457.	AS	β -1,3 glucan (laminaran)	immune parameters	1996	
91. Dalmo RA, Martinsen B, Horsberg TE, Ramstad A, Syvertsen C, Seljelid R and Ingebrigtsen K (1998). Prophylactic effect of beta(1,3)-D glucan (laminaran) against experimental <i>Aeromonas salmonicida</i> and <i>Vibrio salmonicida</i> infections. <i>Journal of Fish Diseases</i> 21: p. 459-462.	AS	β -1,3 glucan (laminaran)	survival	1998	
92. Dimitroglou A, Merrifield DL, Moate R, Davies SJ, Spring P, Sweetman J and Bradley G (2009). Dietary mannan oligosaccharide supplementation modulates intestinal microbial ecology and improves gut morphology of rainbow trout, <i>Oncorhynchus mykiss</i> (Walbaum). <i>J. Anim. Sci.</i> 87, 3226-3234.	RT	MOS	gut pathology	2009	Bio-MOS
93. Zilberg D, Findlay VL, Girling P and Munday BL (2000). Effects of treatment with levamisole and glucans on mortality rates in Atlantic salmon (<i>Salmo salar</i> L.) suffering from amoebic gill disease. <i>Bull. Eur. Ass. Fish Pathol</i> 20(1), 23-27.	AS	unidentified β -glucan levamisol	survival	2000	
94. Djordjevic B, Skugor S, Jørgensen SM, Øverland M, Mydland LT and Krasnov A (2009). Modulation of splenic immune responses to bacterial lipopolysaccharide in rainbow trout (<i>Oncorhynchus mykiss</i>) fed lentinan, a beta-glucan from mushroom <i>Lentinula edodes</i> . <i>Fish & Shellfish Immunology</i> 26: 201-209	RT	unidentified lentinan	immune parameters	2009	
95. Grisdale-Helland B, Helland SJ and Gatlin DM (2008). The effects of dietary supplementation with mannanoligosaccharide, fructooligosaccharide or galactooligosaccharide on the growth and feed utilization of Atlantic salmon (<i>Salmo salar</i>). <i>Aquaculture</i> 283:163-67.	AS	MOS prebiotics	immune parameters	2008	Bio-MOS Inulin Vivalin GOS
96. Guselle NJ, Speare DJ, Markham RJF and Patelakis S (2010). Efficacy of intraperitoneally and orally administered ProVale, a yeast β -1,3-D-glucan product, in inhibiting xenoma formation by the microsporidian <i>Loma salmonae</i> on rainbow trout gills. <i>North American Journal of Aquaculture</i> 72 (1) 65-72.	RT	β -1,3/1,6 glucan	morbidity	2010	ProVale
97. Jeney G., Galeotti M, Volpatti D, Jeney Z and Anderson DP (1997). Prevention of stress in rainbow trout (<i>Oncorhynchus mykiss</i>) fed diets containing different doses of glucan. <i>Aquaculture</i> 154: 1-15.	RT	unidentified glucan	survival immune parameters	1997	Taito

98. Lauridsen JH and Buchmann K (2010). Effects of short- and long-term glucan feeding of rainbow trout (Salmonidae) on the susceptibility to <i>Ichthyophthirius multifiliis</i> infections. Acta Ichthyologica et Piscatoria 40, 61-66.	RT	glucan	infection	2010	
99. Matsuo K and Miyazono I (1993). The influence of long-term administration of peptidoglycan on disease resistance and growth of juvenile rainbow trout. Nippon Suisan Gakkaishi 59 (8), 1377-1379.	RT	peptidoglycan	survival	1993	
100. Nikl L, Albright LJ and Evelyn TPT (1993). Immunostimulants hold promise in furunculosis prevention. Bulletin of the Aquaculture Association of Canada 92-1, 49-42.	ChS	β -1,3 glucan	survival	1993	Vitastim Taito
101. Nikl L, Evelyn TPT and Albright LJ (1993). Trials with an orally and immersion-administered beta-1,3 glucan as an immunoprophylactic against <i>Aeromonas salmonicida</i> in juvenile chinook salmon <i>Oncorhynchus tshawytscha</i> . Diseases of Aquatic Organisms, 1993. 17(3); 191-196.	ChS	β -1,3 glucan	survival	1993	Vitastim Taito
102. Refstie S, Bæverfjord G, Seim RR and Elvebø O (2010). Effects of dietary yeast cell wall beta-glucans and MOS on performance, gut health and salmon lice resistance in Atlantic salmon (<i>Salmo salar</i>) fed sunflower and soybean meal. Aquaculture 305:109-116.	AS	β -1,3/1,6 glucan MOS	infection pathology	2010	Macrogard Patogard
103. Raa J, Rørstad G, Engstad R and Robertsen B (1992). The use of immunostimulants to increase resistance of aquatic organisms to microbial infections. In: Shariff IM, Subasinghe RP and Arthur JR (eds.): Diseases in Asian Aquaculture I; pp 39-50. Fish Health Section, Asian Fisheries Society, Manila, Phillipines.	AS	β -1,3/1,6 glucan	survival	1992	Macrogard
104. Sealey WM, Barrows FT, Hang A, Johansen KA, Overturf K, LaPatra SE and Hardy RW (2008). Evaluation of the ability of barley genotypes containing different amounts of β -glucan to alter growth and disease resistance of rainbow trout <i>Oncorhynchus mykiss</i> . Animal Feed Science and Technology 141:115-128.	RT	barley meal β -1,3/1,6 glucan	survival immune parameters	2008	Macrogard
105. Sealey WM, Barrows FT, Johansen KA, Overturf K, LaPatra SE and Hardy RW (2007). Evaluation of the ability of partially autolyzed yeast and Grobiotic-A to improve disease resistance in rainbow trout. North Am. J. Aquacult. 69, 400-406.	RT	yeast prebiotics	survival	2007	Grobiotic-A
106. Siwicki AK, Kazun K, Glabski E, Terech-Majewska E, Baranowski P and Trapkowska S (2004). The effect of beta-1.3/1.6-glucan in diets on the effectiveness of anti- <i>Yersinia ruckeri</i> vaccine -an experimental study in Rainbow trout (<i>Oncorhynchus mykiss</i>). Polish Journal of Food and Nutrition Sciences 2004, 13:59-61.	RT	β -1,3/1,6 glucan	immune parameters	2004	Macrogard
107. Siwicki AK, Anderson DP and Rumsey GL (1994). Dietary intake of immunostimulants by rainbow trout affect nonspecific immunity and protection against furunculosis. Vet Immunol Immunopathol 41, 125-139.	RT	β -1,3/1,6 glucan yeast chitosan Vit C+E	survival immune parameters	1994	Macrogard
108. Staykov Y, Spring P, Denev S and Sweetman J (2007). Effect of mannan oligosaccharide on the growth performance and immune status of rainbow trout (<i>Oncorhynchus mykiss</i>). Aquaculture International 15:153-161.	RT	MOS	survival immune param	2007	Bio-MOS

109.Suomalainen LR, Bandilla M and Valtonen ET (2009). Immunostimulants in prevention of columnaris disease of rainbow trout <i>Oncorhynchus mykiss</i> (Walbaum). Journal of Fish Diseases 32 (8), 723-726	RT	inactivated yeast +selenium alginic acid	survival	2009	AlkoSel Ergosan
110.Verlhac V, Obach A, Gabaudan J, Schüep W and Hole R (1998). Immunomodulation by dietary vitamin C and glucan in rainbow trout (<i>Oncorhynchus mykiss</i>). Fish & Shellfish Immunology, 8, 409-428.	RT	β -1,3/1,6 glucan Vit C	immune parameters	1998	Macrogard Rovimix Stay-C
111.Verlhac V, Gabaudan J, Obach A, Schüep W and Hole R (1996). Influence of dietary glucan and vitamin C on non-specific and specific immune responses of rainbow trout (<i>Oncorhynchus mykiss</i>). Aquaculture 143, 123 - 133.	RT	β -1,3/1,6 glucan Vit C	immune parameters	1996	Macrogard Rovimix Stay-C
112.Volpatti D, Angelo LD, Jeney G, Jeney, Z. Jeney, Anderson DP and Galeotti M (1998). Nonspecific immune response in fish fed glucan diets prior to induced transportation stress. J. Appl. Ichthyol 14:201-206.	RT	unidentified glucan	immune parameters	1998	Vitastim Taito
113.Yilmaz E, Genc MA and Genc E (2007). Effects of dietary mannan oligosaccharides on growth, body composition, and intestine and liver histology of rainbow trout. <i>Oncorhynchus mykiss</i> . Isr. J. Aquaculture-Bamidgeh 59:182-188.	RT	MOS	pathology	2007	
VARIOUS FURTHER IMMUNOSTIMULANTS					
Citation	Species	Ingredient Additive	Outcomes measured	Year	Remarks
114.Awad E and Austin B (2010). Use of lupin, <i>Lupinus perennis</i> , mango, <i>Mangifera indica</i> , and stinging nettle, <i>Urtica dioica</i> , as feed additives to prevent <i>Aeromonas hydrophila</i> infection in rainbow trout, <i>Oncorhynchus mykiss</i> (Walbaum). J. Fish Dis. 33: 413-420.	RT	herbs	immune parameters	2010	
115.Awad E, Mitchell WJ and Austin B (2011). Effect of dietary supplements on cytokine gene expression in rainbow trout, <i>Oncorhynchus mykiss</i> (Walbaum). J. Fish Dis. 34:629-634.).	RT	herbs	immune parameters	2011	
116.Bilen S and Bulut M (2010). Effects of laurel (<i>Laurus nobilis</i>) on the non-specific immune response of rainbow trout (<i>Oncorhynchus mykiss</i> Walbaum). J. Anim. Vet. Adv. 9; 1275-1279.	RT	herbs	immune parameters	2010	
117.Gioacchini C, Smith P and Carnevali O (2008). Effects of Ergosan on the expression of cytokine genes in the liver of juvenile rainbow trout (<i>Oncorhynchus mykiss</i>) exposed to enteric redmouth vaccine. Veterinary Immunology and Immunopathology 123, 215-222.	RT	alginic acid	immune parameters	2008	Ergosan
118.Guttvik A, Paulsen B, Dalmo RA, Espelid S, Lund V and Bøggwald J (2002). Oral administration of lipopolysaccharide to Atlantic salmon (<i>Salmo salar</i> L.) fry. Uptake, distribution, influence on growth and immune stimulation. Aquaculture 2002; 214:35-53.	AS	LPS	survival immune parameters	2002	
119.Muona M and Virtanen E (1993). Effect of dimethylglycine and trimethylglycine (Betaine) on the response of Atlantic salmon (<i>Salmo salar</i> L.) smolts to experimental <i>Vibrio anguillarum</i> infection. Fish & Shellfish Immunology 3, 439-449.	AS	betaine	survival immune parameters	1995	
120.Nya E and Austin B (2009a). Use of garlic, <i>Allium sativum</i> , to control <i>Aeromonas hydrophila</i> infections in rainbow trout, <i>Oncorhynchus mykiss</i> (Walbaum). Journal of Fish Diseases 32; 963-	RT	herbs	survival	2009	

970.					
121.Nya EJ and Austin B (2009b). Use of dietary ginger, <i>Zingiber officinale</i> Roscoe, as an immunostimulant to control <i>Aeromonas hydrophila</i> infections in rainbow trout <i>Oncorhynchus mykiss</i> (Walbaum). <i>Journal of Fish Diseases</i> 32, 971-977.	RT	herbs	survival	2009	
122.Nya EJ and Austin B (2010). Use of bacterial polysaccharide (LPS) as an immunostimulant for the control of <i>Aeromonas hydrophila</i> infections in rainbow trout <i>Oncorhynchus mykiss</i> (Walbaum). <i>J. Appl. Microbiol.</i> 108, 686-694.	RT	LPS	survival immune parameters	2010	
123.Nya EJ, Dawood Z and Austin B (2010). The garlic component, allicin, prevents disease caused by <i>Aeromonas hydrophila</i> in rainbow trout <i>Oncorhynchus mykiss</i> (Walbaum). <i>Journal of Fish Diseases</i> 33, 293-300.	RT	herbs	survival immune parameters	2010	Allimed
124.Peddie S and Secombes CJ (2003). The immunostimulatory effect of Chevimmun on rainbow trout (<i>Oncorhynchus mykiss</i>). <i>Bulletin of the EAFP</i> 23; 48-51.	RT	herbs	immune parameters	2003	Chevimmun
125.Rahimnejad S, Agh N, Kalbassi M and Khosravi S (2011). Effect of dietary bovine lactoferrin on growth, haematology and non-specific immune response in rainbow trout (<i>Oncorhynchus mykiss</i>). <i>Aquaculture Research</i> (in press) oi:10.1111/j.1365-2109.2011.02947.x	RT	lactoferrin	immune parameters	2012	
126.Sakai M and Kobayashi MT (1995). Activation of rainbow trout, <i>Oncorhynchus mykiss</i> , phagocytic cells by administration of bovine lactoferrin. <i>Comparative Biochemistry and Physiology</i> 110B, 755-759.	RT	lactoferrin	immune parameters	1995	
127.Sakai M, Yoshida T and Kobayashi M (1995). Influence of the immunostimulant, EF203, on the immune responses of rainbow trout, <i>Oncorhynchus mykiss</i> , to <i>Renibacterium salmoninarum</i> . <i>Aquaculture</i> 138 (1-4), 61-67.	RT	antibacterial peptides	immune parameters	1995	EF203
128.Sheikhzadeh N, Nofouzi K, Delazar A and Oushani AK (2011). Immunomodulatory effects of decaffeinated green tea (<i>Camilla sinensis</i>) on the immune system of rainbow trout (<i>Oncorhynchus mykiss</i>). <i>Fish & Shellfish Immunology</i> 31, 1268-1269.	RT	herbs	immune parameters	2011	
129.Sheikhzadeh N, Pashaki AK, Nofouzi K, Heidarieh M and Tayefi-Nasrabadi (2012). Effects of dietary Ergosan on cutaneous mucosal immune response in rainbow trout (<i>Oncorhynchus mykiss</i>). <i>Fish & Shellfish Immunology</i> 32, 407-410	RT	alginic acid	immune parameters	2012	Ergosan
130.Suomalainen LR, Bandilla M and Valtonen ET (2009). Immunostimulants in prevention of columnaris disease of rainbow trout <i>Oncorhynchus mykiss</i> (Walbaum). <i>Journal of Fish Diseases</i> 32 (8), 723-726.	RT	alginic acid inactivated yeast +selenium	survival	2009	Ergosan AlkoSel
131.Suzuki K, Misakak N and Sakai DK (2006). Efficacy of green tea extract on removal of the ectoparasitic flagellate <i>Ichtyobodo necator</i> from chum salmon, <i>Oncorhynchus keta</i> , and masou salmon, <i>Oncorhynchus masou</i> . <i>Aquaculture</i> 259, 17-27.	ChS MS	herbs	ectoparasite load	2006	
132.Yoshida T, Sakai M, Kitao T, Soliman MK, Araki S, Saitoh R, Ineno T and Inglis V (1993). Immunomodulatory effects of the fermented products of chicken egg, EF203, on rainbow trout, <i>Oncorhynchus mykiss</i> . <i>Aquaculture</i> 109 (3-4); 207-214.	RT	antibacterial peptides	survival immune parameters	1993	EF203

NUCLEOTIDES					
Citation	Species	Ingredient Additive	Outcomes measured	Year	Remarks
133. Adamek Z, Hamackova J, Kouril J, Vachta R and Stibranyiova I (1996). Effect of Ascogen probiotics supplementation on farming success of rainbow trout (<i>Oncorhynchus mykiss</i>) and wels (<i>Silurus glais</i>) under conditions of intensive culture. <i>Krmiva (Zagreb)</i> 38: 11-20.	RT	nucleotide mix	survival	1996	Ascogen
134. Is C, Williams PD and Forno PF (2001). Dietary nucleotide: a novel supplement in fish feeds. 1. Effects on resistance to disease in salmonids. <i>Aquaculture</i> 199, 159-169.	AS RT CS	nucleotide mix β -1,3/1,6 glucan	survival immune parameters	2001	Optimun Macrogard
135. Burrells C, Williams PD, Southgate PJ and Wadsworth SL (2001). Dietary nucleotide: a novel supplement in fish feeds. 2. Effects on vaccination, salt water transfer, growth rate and physiology of Atlantic salmon (<i>Salmo salar</i> L.). <i>Aquaculture</i> 199, 177-184.	AS	nucleotide mix	survival immune parameters	2001	Optimun
136. Leonardi M, Sandino AM and Klempau A (2003). Effect of a nucleotide-enriched diet on the immune system, plasma cortisol levels and resistance to infectious pancreatic necrosis (IPN) in juvenile rainbow trout (<i>Oncorhynchus mykiss</i>). <i>Bulletin of the EAAP</i> 23(2), 52-59.	RT	nucleotide mix	survival immune parameters	2003	Optimun
137. Tacchi L, Bickerdike R, Douglas A, Secombes CJ and Martin SA (2011). Transcriptomic responses to functional feeds in Atlantic salmon (<i>Salmo salar</i>). <i>J Fish & Shellfish Immunology</i> 31, 704-715.	AS	nucleotides MOS FOS Vit C+E	immune parameters	2011	proprietary health premix
138. Tahmasebi-Koyani A, Keyvanshokoo S, Nematollahi A, Mahmoudi N and Pasha-Zanoosi H (2011). Dietary administration of nucleotides to enhance growth, humoral immune responses, and disease resistance of the rainbow trout (<i>Oncorhynchus mykiss</i>) fingerlings. <i>Fish & Shellfish Immunology</i> 30; 189-193.	RT	nucleotide mix	survival immune parameters	2011	Optimun Vannagen
LIPIDS , BILE SALTS, ORGANIC ACID SALTS, AND OTHERS					
Citation	Species	Ingredient Additive	Outcomes measured	Year	Remarks
139. Alne H, Thomassen MS, Takle H, Terjesen BF, Grammes F, Oehme M, Refstie S, Sigholt T, Berge RK and Rørvik KA (2009). Increased survival by feeding tetradecylthioacetic acid during a natural outbreak of heart and skeletal muscle inflammation in S0 Atlantic salmon, <i>Salmo salar</i> L. <i>J Fish Dis.</i> 32(11); 953-61.	AS	lipids	survival	2009	TTA carnitine
140. Bell JG, Dick DR, McVicar AH, Sargent JR and Thompson KD (1993). Dietary sunflower, linseed and fish oils affect phospholipid fatty acid composition, development of cardiac lesions, phospholipase activity and eicosanoid production in Atlantic salmon (<i>Salmo salar</i>). <i>Prostaglandins, Leukotrienes and Eicosanoid Fatty Acids</i> 49; 665-673.	AS	lipids	cardiac tissue pathology	1993	sunflower oil linseed oil
141. Erdal JI, Evensen Ø, Kaurstad OK, Lillehaug A, Solbakken R and Thorud K (1991). Relationship between diet and immune response in Atlantic salmon (<i>Salmo salar</i> L.) feeding various levels of ascorbic acid and omega-3 fatty acids. <i>Aquaculture</i> 98, 363-379.	AS	lipids Vit C	immune parameters	1991	Omega-3
142. Gao Y, Storebakken T, Shearer K and Øverland M (2011). Supplementation of fishmeal and plant-protein based diets for rainbow trout with a mixture of sodium formate and butyrate. <i>Aquaculture</i> , 311, 233-240.	RT	organic acid salts	intestinal morphology	2011	butyrate sodium formate

143. Gjøen T, Kleveland EJ, Moya-Falcón C, Frøystad MK, Vegusdal A, Hvattum E, Berge RK and Ruyter B (2007). Effects of dietary thia fatty acids on lipid composition, morphology and macrophage function of Atlantic salmon (<i>Salmo salar</i> L.) kidney. <i>Comp Biochem Physiol B Biochem Mol Biol.</i> 2007 148 (1), 103-11.	AS	lipids	immune parameters	2007	TTA DTA
144. Iwashita Y, Suzuki N, Yamamoto T, Shibata J, Isokawa K, Soon AH, Ikehata Y, Furuaia, Sugita G and Goto T (2008). Supplemental effect of cholytaurine and soybean lecithin to a soybean meal-based fish meal-free on the hepatic and intestinal morphology of rainbow trout, <i>Oncorhynchus mykiss</i> . <i>Fisheries Science</i> 74, 1083-1095..	RT	bile salts lipids	alleviation of intestinal morphology	2008	lecithin
145. Iwashita Y, Suzuki N, Matsunari H, Sugita T and Yamamoto T (2009). Influence of soya saponins, soya lectin, and cholytarine supplemented to a casein-based semipurified diet on intestinal morphology and biliary bile status in fingerling rainbow trout <i>Oncorhynchus mykiss</i> . <i>Fish. Sci.</i> 75, 1307-1315.	RT	bile salts	alleviation of intestinal pathology	2009	cholytaurine
146. Kiron V, Gunji A, Okamoto N, Satoh S, Ikeda Y and Watanabe T (1993). Dietary nutrient dependent variations on natural-killer activity of the leucocytes of rainbow trout. <i>Fish Pathol</i> 3,28: 71-76.	RT	lipids	immune parameters	1993	essential fatty acids
147. Lødemehl JB, Mayhew TM, Myklebust R, Olsen RE, Espelid S and Ringø E (2001). Effects of three dietary oils on disease susceptibility in Arctic charr (<i>Salvelinus alpinus</i> L.) during cohabitation challenge with <i>Aeromonas salmonicida</i> subsp. <i>salmonicida</i> . <i>Aquaculture Research</i> 32, 935-945.	AC	lipids	survival	2001	
148. Olsen RE, Myklebust R, Ringø E and Mayhew TM (2000). The influence of dietary linseed oil and saturated fatty acids on caecal enterocytes in Arctic char (<i>Salvelinus alpinus</i> L.): a quantitative ultrastructural study. <i>Fish Physiology and Biochemistry</i> 22, 207-216.	AC	lipids	intestinal morphology	2000	linseed oil saturated fatty acids
149. Romarheim OH, Skrede A, Gao YL, Krogdahl, Denstadli V, Lilleeng E and Storebakken T (2006). Comparison of white flakes and toasted soybean meal partly replacing fish meal as protein source in extruded feed for rainbow trout (<i>Oncorhynchus mykiss</i>). <i>Aquaculture</i> 256, 354-364.	RT	processing conditions	alleviation of intestinal pathology	2006	heat treatment
150. Rørvik KA, Alne H, Gaarder M, Ruyter B, Maaseide NP, Jakobsen JV, Berge RK, Sigholt T and Thomassen MS (2007). Does the capacity for energy utilization affect the survival of post-smolt Atlantic salmon, <i>Salmo salar</i> L., during natural outbreaks of infectious pancreatic necrosis? <i>J Fish Dis</i> 30: 399-409.	AS	lipids	survival	2007	TTA
151. Rørvik KA, Dehli A, Thomassen M, Ruyter B, Steien SH and Salte R (2003). Synergistic effects of dietary iron and omega-3 fatty acid levels on survival of farmed Atlantic salmon, <i>Salmo salar</i> L., during natural outbreaks of furunculosis and cold water vibriosis. <i>J Fish Dis.</i> 2003 26(8); 477-85.	AS	lipids	survival	2003	Omega-3
152. Rørvik KA, Steien SH, Saltkjelvik B and Thomassen MS (2000) Urea and trimethylamine oxide in diets for sea water farmed rainbow trout; effect on fat belching, skin vesicle, winter ulcer and quality grading. <i>Aquaculture Nutrition</i> 6, 247-254	RT	Urea TMAO	skin ulcers	2000	osmoregulation
153. Suzuki N and Yamamoto T (2004). Histological observation of intestinal degradation of defatted soybean diet and supplemental effect of soybean lecithin for fingerling rainbow trout, <i>Oncorhynchus mykiss</i> . <i>J Sch Mar Sci Technol Tokai Univ</i> 2 (3), 25-35. (In Japanese)..	RT	lipids	intestinal morphology	2004	lechnin
154. Iwashita Y, Yamamoto T, Goto T and Suzuki N (2007). Histological observation of liver and	RT	bile salts	alleviation of	2007	gall powder

distal intestine of fingerling rainbow trout, <i>Oncorhynchus mykiss</i> , fed defatted soybean meal based non- fish meal diet supplemented with gall powder. Aquaculture Science 55; 225-230. (In Japanese).			intestinal pathology		
155. Yamamoto T, Goto T, Kine Y, Endo Y, Kitaoka Y, Sugita T, Furuita H, Iwashita Y and Suzuki N (2008). Effect of an alcohol extract from a defatted soybean meal supplemented with a casein-based semi-purified diet on the biliary status and intestinal conditions in rainbow trout <i>Oncorhynchus mykiss</i> (Walbaum). Aquacult. Res. 39, 986-994.	RT	bile salts	alleviation of intestinal pathology	2008	bovine bile salts
156. Yamamoto T, Suzuki N, Furuita H, Sugita T, Tanaka N and Goto T (2007). Supplemental effect of bile salts to soybean meal-based diet on growth and feed utilization of rainbow trout <i>Oncorhynchus mykiss</i> . Fisheries Sci. 73, 123-131.	RT	bile salts	alleviation of intestinal pathology	2007	bovine bile salts
PREBIOTICS					
Citation	Species	Ingredient Additive	Outcomes measured	Year	Remarks
157. Bakke-McKellep AM, Penn MH, Salas PM, Refstie S, Sperstad S, Landsverk T, Ringø E and Krogdahl Å (2007). Effects of dietary soybean meal, inulin and oxytetracycline on gastrointestinal histological characteristics, distal intestine cell proliferation and intestinal microbiota in Atlantic salmon (<i>Salmo salar L.</i>). Brit. J. Nutr. 97:699–713.	AS	prebiotics	pathology	2007	
158. Irianto A and Austin B (2003). Use of dead probiotic cells to control furunculosis in rainbow trout, <i>Oncorhynchus mykiss</i> (Walbaum). Journal of Fish Diseases, 26:59 - 62.	RT	prebiotics	survival morbidity	2003	
159. Kristiansen M, Merrifield DL, Gonzales Vecino JL, Myklebust R and Ringø E (2011). Evaluation of prebiotic and probiotic effects on the intestinal gut microbiota and histology of Atlantic salmon (<i>Salmo salar L.</i>). Journal of Aquaculture Research & Development S1:009. doi: 10.4172/2155-9546.	AS	prebiotics	intestinal morphology	2011	EWOS Prebiosaal
160. Olsen RE, Myklebust R, Kryvi H, Mayhew TM and Ringø E (2001). Damaging effect of dietary inulin on intestinal enterocytes in Arctic charr (<i>Salvelinus alpinus L.</i>). Aquacult. Res. 32:931–934.	AC	Prebiotics	pathology	2001	
161. Ringø E, Sperstad S, Myklebust R, Mayhew TM and Olsen RE (2006). The effect dietary inulin on aerobic bacteria associated with the hindgut of Arctic charr (<i>Salvelinus alpinus L.</i>). Aquacult. Res. 37:891–897.	AC	Prebiotics	immune parameters	2006	
162. Romarheim OH, Øverland M, Mydland LT, Skrede A and Landsverk T (2011). Bacteria grown on natural gas prevent soybean meal-induced enteritis in Atlantic salmon. <i>J. Nutr.</i> 141, 124-130.	AS	prebiotic bacterial meal	pathology	2011	
163. Sørensen M, Penn M, El-Mowafi A, Storebakken T, Chunfang C, Øverland M and Krogdahl Å (2011). Effect of stachyose, raffinose and soya saponins supplementation on nutrient digestibility, digestive enzymes, gut morphology and growth performance of Atlantic salmon (<i>Salmo salar L.</i>). Aquaculture 314,145-152.	AS	prebiotics	Intestinal morphology	2011	
PROBIOTICS					
Citation	Species	Ingredient Additive	Outcomes measured	Year	Remarks
164. Pieters N, Brunt J, Austin B and Lyndon AR (2008). Efficacy of in-feed probiotics against <i>Aeromonas bestiarum</i> and <i>Ichthyophthirius multifiliis</i> skin infections in rainbow trout	RT	Aereomonas sp.	survival morbidity	2008	

(<i>Oncorhynchus mykiss</i> Walbaum). J. Appl. Microbiol. 105, 723–732.		Brochotric sp. Probiotic mix			
165.Brunt J, Hansen R, Jamieson DJ and Austin B (2008). Proteomic analysis of rainbow trout (<i>Oncorhynchus mykiss</i> Walbaum) serum after administration of probiotics in diets. Vet. Immunol. Immunopathol. 121, 199–205.	RT	Aeromonas sp Bacillus spp.	proteomics	2008	
166.Brunt J, Newaj-Fyzul A and Austin B (2007). The development of probiotics for the control of multiple bacterial diseases of rainbow trout, <i>Oncorhynchus mykiss</i> (Walbaum). J. Fish Dis. 30, 573–579.	RT	Aeromonas sp Bacillus spp.	survival morbidity	2007	
167.Irianto A and Austin B (2002b). Use of probiotics to control furunculosis in rainbow trout, <i>Oncorhynchus mykiss</i> (Walbaum). J. Fish Dis. 25, 333–342.	RT	Aeromonas sp Vibrio sp. Carnobact. sp. Probiotic mix	survival morbidity	2002	
168.Abbass A, Sharifuzzaman SM and Austin B (2010). Cellular components of probiotics control <i>Yersinia ruckeri</i> infection in rainbow trout, <i>Oncorhynchus mykiss</i> (Walbaum). Journal of Fish Diseases 33, 31-37.	RT	Aeromonas sp. Bacillus spp.	survival	2010	
169.Brunt J and Austin B (2005). Use of a probiotic to control lactococcosis and streptococcosis in rainbow trout, <i>Oncorhynchus mykiss</i> (Walbaum). J. Fish Dis. 28, 693–701.	RT	Aeromonas sp.	survival morbidity	2005	
170.Arijo S, Brunt J, Chabrillón M, Díaz-Rosales P and Austin B (2008). Subcellular components of <i>Vibrio harveyi</i> and probiotics induce immune responses in rainbow trout, <i>Oncorhynchus mykiss</i> (Walbaum), against <i>V. harveyi</i> . J. Fish Dis. 31, 579–590.	RT	Aeromonas spp.	immune paramet	2008	
171.Newaj-Fyzul A, Adesiyun AA, Mutani A, Ramsubhag A, Brunt J and Austin B (2007). <i>Bacillus subtilis</i> AB1 controls <i>Aeromonas</i> infection in rainbow trout (<i>Oncorhynchus mykiss</i> , Walbaum). J. Appl. Microbiol. 103, 1699–1706.	RT	Bacillus sp	survival morbidity	2007	
172.Capkin E and Altinok I (2009). Effects of dietary probiotic supplementations on prevention/treatment of yersiniosis disease. J Appl Microbiol. 106:1147-1153.	RT	Bacillus sp. Enterobact. sp.	survival morbidity	2007	
173.Merrifield DL, Bradley G, Baker RTM and Davies SJ (2010b). Probiotic applications for rainbow trout (<i>Oncorhynchus mykiss</i> Walbaum) II. Effects on growth performance, feed utilisation, intestinal microbiota and related health criteria post antibiotic treatment. Aqua. Nutr. doi:10.1111/j.1365-2095.2009.00688.x early view.	RT	Bacillus sp. enterococci	pathology	2010	
174.Merrifield DL, Bradley G, Baker RTM, Dimitroglou A and Davies SJ (2010a). Probiotic applications for rainbow trout (<i>Oncorhynchus mykiss</i> Walbaum) I. Effects on growth performance, feed utilisation, intestinal microbiota and related health criteria. Aqua. Nutr. doi:10.1111/j.1365-2095.2009.00689.x early view.	RT	Bacillus sp. enterococci	pathology	2010	
175.Yamamoto T, Iwashita Y, Matsunari H, Sugita T, Furuita H, Akimoto A, Okamatsu K and Suzuki N (2010). Influence of fermentation conditions for soybean meal in a non-fish meal diet on the growth performance and physiological condition of rainbow trout <i>Oncorhynchus mykiss</i> . Aquaculture 309, 173-180.	RT	Bacillus sp.	intestinal morphology	2010	
176.Raida MK, Larsen JL, Nielsen ME and Buchmann K (2003). Enhanced resistance of rainbow trout, <i>Oncorhynchus mykiss</i> (Walbaum), against <i>Yersinia ruckeri</i> challenge following oral administration of <i>Bacillus subtilis</i> and <i>B. licheniformis</i> (BioPlus2B). J Fish Dis.; 26:495-498.	RT	Bacillus spp. Alginic acid	survival morbidity	2003	BioPlus2B Ergosan
177.Robertson PAW, O'Dowd C, Burrells C, Williams P and Austin B (2000). Use of <i>Carnobacterium</i> sp as a probiotic for Atlantic salmon (<i>Salmo salar</i> L.) and rainbow trout (<i>Oncorhynchus mykiss</i> ,	AS	Carnobact. sp.	immune paramet	2000	

Walbaum). <i>Aquaculture</i> 185: 235–243.					
178.Rodriguez-Estrada U, Satoh S, Haga Y, Fushimi H and Sweetman J (2009). Effects of single and combined supplementation of <i>Enterococcus faecalis</i> , mannan oligosaccharide and polyhydrobutyric acid on growth performance and immune response of rainbow trout <i>Oncorhynchus mykiss</i> . <i>Aquacult. Sci.</i> 57, 609–617.	RT	enterococci	immune paramet	2009	
179.Sharifuzzaman SM and Austin B (2009). Influence of probiotic feeding duration on disease resistance and immune parameters in rainbow trout. <i>Fish & Shellfish Immunology</i> 27, 440-445.	RT	enterococci	survival immune parameters	2009	Kocuria SM1
180.Sharifuzzaman SM and Austin B (2010). <i>Kocuria SM1 controls vibriosis in rainbow trout (Oncorhynchus mykiss Walbaum)</i> . <i>Journal of Applied Microbiology</i> 108 (6), 2162–2170 , DOI: 10.1111/j.1365-2672.2009.04618.x	RT	enterococci	survival morbidity	2010	Kocuria SM1
181.Sharifuzzaman, SM and Austin B (2010). Development of protection in rainbow trout (<i>Oncorhynchus mykiss</i> Walbaum) to <i>Vibrio anguillarum</i> following the use of Kocuria 8 SM1. <i>Fish & Shellfish Immunology</i> 29, 212-216.	RT	enterococci	survival morbidity	2010	Kocuria SM1
182.Sharifuzzaman SM, Abbass A, Tinsley JW and Austin B (2009). Subcellular components of probiotics Kocuria SM1 and Rhodococcus SM2 induce protective immunity in rainbow trout (<i>Oncorhynchus mykiss</i> Walbaum) against <i>Vibrio anguillarum</i> . <i>Fish & Shellfish Immunology</i> 30, 347-353.	RT	enterococci	survival morbidity	2010	Kocuria SM1
183.Burbank DR, Shah DH, La Patra SE, Fornshell G and Cain KD (2011). Enhanced resistance to coldwater diseases following feeding of probiotic strains to rainbow trout <i>Oncorhynchus mykiss</i> . <i>Aquaculture</i> 321; 185-190.	RT	entoerococci	survival	2011	
184.Balcazar JL, de Blas I, Ruiz-Zarzuela I, Vendrell D, Calvo AC, Márquez I, Gironés O and Muzquiz JL (2007a). Changes in intestinal microbiota and humoral immune response following probiotic administration in brown trout (<i>Salmo trutta</i>). <i>British Journal of Nutrition</i> 97, 522-527.	BT	lactic acid bacteria Leucostonc sp.	immune parameters	2007	
185.Balcazar JL, de Blas I, Ruiz-Zarzuela I, Vendrell D, Gironés O and Muzquiz JL (2007b). Enhancement of the immune response and protection induced by probiotic lactic acid bacteria against furunculosis in rainbow trout (<i>Oncorhynchus mykiss</i>). <i>FEMS Immunol Med Microbiol.</i> 51:185-193.	RT	lactic acid bacteria	survival morbidity	2007	
186.Balcázar JL, Vendrell D, de Blas I, Ruiz-Zarzuela I and Múzquiz JL. (2009). Effect of <i>Lactococcus lactis</i> CLFP 100 and <i>Leuconostoc mesenteroides</i> CLFP 196 on <i>Aeromonas salmonicida</i> infection in brown trout (<i>Salmo trutta</i>). <i>J Mol Microbiol Biotechnol</i> ; 17:153-157.	BT	lactic acid bacteria Leucostonc sp.	survival morbidity	2009	
187.Balcázar JL, de Blas I, Ruiz-Zazuela I, Calvo AC, Márquez I, Gironés O and Muzquiz JL (2007a). Changes in intestinal microbiota and humoral immune response following probiotic administration in brown trout (<i>Salmo trutta</i>). <i>Brit. J. Nutr.</i> 97, 522–552.	BT	lactic acid bacteria Leucostonc sp.	immune parameters	2007	
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201.Vendrell D, Balcázar JL, de Blas I, Ruiz-Zarzuola I, Gironés O and Múzquiz JL (2008). Protection of rainbow trout (<i>Oncorhynchus mykiss</i>) from lactococcosis by probiotic bacteria. <i>Comp Immunol Microbiol Infect Dis</i> , 31:337-45.	RT	lactic acid bacteria Leucostonc sp.	survival morbidity	2008	
202.Arndt RE and Wagner EJ (2007). Enriched Artemia and probiotic diets improve survival of Colorado River cutthroat trout larvae and fry. <i>North American Journal of Aquaculture</i> 69, 190-196.	CtT	lactic acid bacteria lipids	survival	2007	Omega-3
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salmon (<i>Salmo salar</i>). Aquaculture 246, 331-345.					
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212. Barnes ME, Fletcher B, Durben DJ and Reeves SG (2007). Effects of a proprietary yeast supplement during rearing of two strains of juvenile rainbow trout and juvenile lake trout. Proceedings of the South Dakota Academy of Science 86; 89-98.	RT LT	yeast	survival	2007	DVAqua
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216. Tukmechi A, Rahmati Andani HR, Manaffar R and Sheikhzadeh (2011). Dietary administration of beta-mercapto-ethanol treated <i>Saccharomyces cerevisiae</i> enhanced the growth, innate immune response and disease resistance of rainbow trout, <i>Oncorhynchus mykiss</i> . Fish & Shellfish Immunology 30, 923-928.	RT	yeast	survival immune parameters	2011	

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VITAMINS					
Citation	Species	Ingredient Additive	Outcomes measured	Year	Remarks
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219.Amar EC, Kiron V, Okamoto N, Satoh S and Watanabe T (2000). Effects of β -carotene on the immune response of rainbow trout (<i>Oncorhynchus mykiss</i>) <i>Fisheries Science</i> 66, 1068-1075.	RT	carotenoids	immune parameters	2000	
220.Amar EC, Kiron V, Satoh S and Watanabe T (2001). Influence of various dietary synthetic carotenoids on bio-defense mechanisms in rainbow trout (<i>Oncorhynchus mykiss</i> Walbaum) associated with dietary intake of carotenoids from natural products. <i>Fish and Shellfish Immunology</i> 16, 527-537.	RT	carotenoids	immune parameters	2001	
221.Amar EC, Kiron V, Satoh S and Watanabe T (2004). Enhancement of innate immunity in rainbow trout, <i>Oncorhynchus mykiss</i> (Walbaum) <i>Aquaculture Research</i> 32, 162-173.	RT	carotenoids	immune parameters	2004	
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227.Hardie LJ, Fletcher TC and Secombes CJ (1991). The effect of vitamin E on the immune response of the Atlantic salmon (<i>Salmo salar</i> L.). <i>Aquaculture</i> 87, 1-13.	AS	Vit E	immune parameters	1991	
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230.Navarre O and Halver JE (1989). Disease resistance and humoral antibody production in rainbow	RT	Vit C	survival	1989	

trout fed high levels of vitamin C. <i>Aquaculture</i> 79, 207-221.			immune parameters		
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236. Wahli T, Verlhac V, Girling P, Gabaudan J and Aebischer C (2003). Influence of dietary vitamin C on the wound healing process in rainbow trout (<i>Oncorhynchus mykiss</i>). <i>Aquaculture</i> 225:371-386.	RT	Vit C	wound healing	2003	Rovimix-Stay C
237. Wahli T, Verlhac V, Gabaudan J, Meier W and Schüep W (1998). Influence of combined vitamins C and E on immunity and disease resistance of rainbow trout (<i>Oncorhynchus mykiss</i>). <i>J Fish Dis</i> 21, 127-137.	RT	Vit C+E	survival morbidity immune parameters	1998	Rovimix-Stay C
238. Waagbø R, Glette J, Nilsen ER and Sandnes K (1993). Dietary vitamin C, immunity and disease resistance in Atlantic salmon (<i>Salmo salar</i>). <i>J Fish Physiol Biochem</i> 12, 61-73.	AS	Vit C glucan	survival morbidity immune paramet	1993	