

Supplementary S1. The included studies

Table S1.1. The characteristics of all included articles in alphabetic order of the first author's name.

#	Article ID	Type	RBAC	Source	Design	Condition	Biological Action
1	Ali et al. (2012)	Article	Biobran MGN-3	Daiwa	Human RCT	Healthy	Immunomodulation (NK cells, cytokines)
2	An (2011)	Thesis	RBEP/EFR	Erom	Animal, cell, chemical	Healthy, allergy	Cytotoxicity, antiallergy, antioxidant
3	Bae et al. (2004)	Article	Biobran MGN-3	Daiwa	Animal	Healthy, allergy	Immunomodulation (macrophages, splenocytes), antiallergy
4	Badr El-Din et al. (2008)	Article	Biobran MGN-3	Daiwa	Animal	Healthy	Immunomodulation (NK cells)
5	Chae et al. (2004)	Article	Biobran MGN-3	Daiwa	Cell	Healthy	Immunomodulation (splenocytes, macrophages, T & B cells, cytokines)
6	Choi et al. (2014)	Article	RBEP/EFR	Erom	Human RCT	Healthy	Immunomodulation (NK cells, macrophages)
7	Cholujova et al. (2009)	Article	Biobran MGN-3	Daiwa	Cell	Healthy	Immunomodulation (Dendritic cells)
8	Elsaid et al. (2018)	Article	Biobran MGN-3	Daiwa	Human RCT	Geriatric	Immunomodulation (NK cells, NK T cells)
9	Elsaid et al. (2020)	Article	Biobran MGN-3	Daiwa	Human RCT	Geriatric	Psychoneuroimmuno-modulation
10	Elsaid et al. (2021)	Article	Biobran MGN-3	Daiwa	Human RCT	Geriatric, cold / flu	Flu prevention
11	Endo and Kanbayashi (2003)	Short paper	Biobran MGN-3	Daiwa	Animal	Healthy	Bioavailability, allergy (antibodies)
12	Ghoneum and Abedi (2004)	Article	Biobran MGN-3	Daiwa	Animal, cell	Aging	Immunomodulation (Macrophages, NK cells)
13	Ghoneum and Agrawal (2011)	Article	Biobran MGN-3	Daiwa	Cell	Healthy	Immunomodulation (Dendritic cells, T cells, cytokines)
14	Ghoneum and Agrawal (2014)	Article	Biobran MGN-3	Daiwa	Cell	Healthy	Immunomodulation (Dendritic cells, T cells, cytokines)
15	Ghoneum and Jewett (2000)	Article	Biobran MGN-3	Daiwa	Cell	Healthy	Immunomodulation (NK cells, cytokines)
16	Ghoneum and Matsuura (2004)	Article	Biobran MGN-3	Daiwa	Cell	Healthy	Immunomodulation (Macrophages, cytokines)
17	Ghoneum (1998)	Article	Biobran MGN-3	Daiwa	Human Bef-Aft	Healthy	Immunomodulation (NK cells)
18	Ghoneum (1999)	Abstract	Biobran MGN-3	Daiwa	Human Bef-Aft	Chemical exposure	Immunomodulation (NK cells, T & B cells)
19	Ghoneum et al. (2008)	Article	Biobran MGN-3	Daiwa	Cell	Healthy	Antibacterial, phagocytic cells (monocytes, neutrophils)
20	Giese et al. (2008)	Article	Biobran MGN-3	Daiwa	Animal	Healthy	Immunomodulation (NK cells, cytokines)
21	Hoshino et al. (2010)	Article	Biobran MGN-3	Daiwa	Cell	Healthy	Antiinflammation (Mast cells, cytokines, antibodies)
22	Kambayashi and Endo (2002)	Abstract	Biobran MGN-3	Daiwa	Animal	Allergy	Antiallergy, antiinflammation (antibodies)
23	Kang et al. (2022)	Article	RBEP/EFR	Erom	Cell	Healthy	Immunomodulation (Splenocytes, macrophages, cytokines)
24	Kim D.J. et al. (2011a)	Article	Fermented SuperC3GHi bran	Erom	Animal, cell	Healthy, allergy	Antiallergy (mast cells), antiinflammation

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25	Kim D.J. et al. (2011b)	Article	Fermented black rice bran	STR Biotech	Animal	Healthy	Immunomodulation (macrophages)
26	Kim H.Y. et al. (2005)	Article	RBEP/EFR	Erom	Animal, cell	Healthy	Immunomodulation (Peyer's patch cells, macrophages)
27	Kim S.P. et al. (2013)	Article	BPP/FF	STR Biotech	Cell	Healthy	Immunomodulation (macrophages)
28	Kim S.P. et al. (2014)	Article	BPP/FF	STR Biotech	Animal, cell	Healthy, bacterial infection	Immunomodulation (macrophages), antibacterial
29	Kim S.P. et al. (2018)	Article	BPRBE	STR Biotech	Cell	Healthy	Immunomodulation (macrophages, cytokines)
30	Miura et al. (2004/2013)	Article	Biobran MGN-3	Daiwa	Chemical, cell	Healthy	Immunomodulation (macrophages, cytokines)
31	Noaman et al. (2008)	Article	Biobran MGN-3	Daiwa	Animal	Healthy	Antioxidant
32	Pérez-Martínez et al. (2015)	Article	Biobran MGN-3	Daiwa	Cell	Healthy	Immunomodulation (macrophages, splenocytes, cytokines)
33	Sudo et al. (2001)	Article	Biobran MGN-3	Daiwa	Animal	Endotoxemia	Antiinflammation
34	Tazawa et al. (2000)	Article	Biobran MGN-3	Daiwa	Chemical	Reactive oxygen species	Antioxidant
35	Tazawa et al. (2003)	Article	Biobran MGN-3	Daiwa	Human RCT	Geriatric, cold / flu	Immunomodulation, flu prevention
36	Yu et al. (2004)	Article	RBEP/EFR	Erom	Cell	Healthy	Immunomodulation (macrophages)
37	Zhu et al. (2017)	Article	Biobran MGN-3	Daiwa	Cell	Healthy	Angiogenesis (growth factor)

Abbreviations: Bef-Aft, before and after study; BPP/FF, bioprocessed polysaccharide or fermented black rice bran; BPRBE, bioprocessed rice bran extract; NK, natural killer; RBEP/EFR, rice bran bio-exopolymer or Erom's fermented rice bran; RCT, randomised controlled trial.

Supplementary S2. Full citation of all included articles in APA 7th format

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