

## Data S1. Search strategy used for the database searches.

### PubMed

#1 'Probiotics'[Mesh] OR 'Lactobacillus'[Mesh] OR 'Bifidobacterium'[Mesh]  
OR probiotics[tiab] OR lactobacillus[tiab] OR bifidobacterium[tiab]  
OR 'microbial therapy'[tiab] OR 'gut microbiota modulation'[tiab]  
#2 'Colorectal Neoplasms'[Mesh] OR 'Colonic Neoplasms'[Mesh] OR 'Rectal Neoplasms'[Mesh]  
OR 'colorectal cancer'[tiab] OR 'colon cancer'[tiab] OR 'rectal cancer'[tiab]  
OR 'CRC'[tiab] OR 'colorectal carcinoma'[tiab]  
#3 'Meta-Analysis'[Publication Type] OR 'Meta-Analysis as Topic'[Mesh]  
OR 'Systematic Review'[Publication Type]  
OR 'systematic review'[tiab] OR 'meta-analysis'[tiab] OR 'metaanalysis'[tiab]  
#4 'Therapeutics'[Mesh] OR 'Adjuvant Therapy'[Mesh] OR 'Antineoplastic Agents'[Mesh]  
OR 'chemotherapy'[tiab] OR 'radiotherapy'[tiab] OR 'surgical adjuvant therapy'[tiab]  
OR 'adjuvant treatment'[tiab] OR 'postoperative care'[tiab]  
#5 #1 AND #2 AND #3 AND #4

### Embase

#1 'probiotic agent'/exp OR 'lactobacillus'/exp OR 'bifidobacterium'/exp  
OR probiotics:ti,ab,kw OR lactobacillus:ti,ab,kw OR bifidobacterium:ti,ab,kw  
OR 'microbial therapy':ti,ab,kw OR 'gut microbiota modulation':ti,ab,kw  
#2 'colorectal cancer'/exp OR 'colon cancer'/exp OR 'rectal cancer'/exp  
OR 'colorectal carcinoma':ti,ab,kw OR 'crc':ti,ab,kw OR 'colon neoplasms':ti,ab,kw  
OR 'rectal tumor':ti,ab,kw OR 'colorectal tumor':ti,ab,kw  
#3 'meta analysis'/exp OR 'systematic review'/exp  
OR 'meta-analysis':ti,ab,kw OR 'metaanalysis':ti,ab,kw OR 'systematic review':ti,ab,kw  
#4 'adjuvant therapy'/exp OR 'chemotherapy'/exp OR 'postoperative care'/exp  
OR 'adjuvant treatment':ti,ab,kw OR 'neoadjuvant therapy':ti,ab,kw  
OR 'postoperative complication':ti,ab,kw OR 'surgical adjuvant':ti,ab,kw  
#5 #1 AND #2 AND #3 AND #4

### CENTRAL

#1 MeSH descriptor: [Colorectal Neoplasms] explode all trees  
#2 (colorectal NEAR/3 (cancer\* OR neoplas\* OR carcinom\* OR tumor\* OR tumour\* OR adenocarcinom\* OR malignan\*)):ti,ab,kw  
#3 ((colon OR rectal OR rectosigmoid) NEAR/3 (cancer\* OR neoplas\* OR carcinom\*)):ti,ab,kw  
#4 #1 OR #2 OR #3  
#5 MeSH descriptor: [Probiotics] explode all trees

#6 (probiotic\* OR 'Lactobacillus' OR 'Bifidobacterium' OR 'Saccharomyces' OR 'Streptococcus thermophilus'):ti,ab,kw  
#7 ('microbial therapy' OR 'bacteriotherapy' OR 'gut microbiota intervention'):ti,ab,kw  
#8 #5 OR #6 OR #7  
#9 #4 AND #8  
#10 (randomized controlled trial OR randomised controlled trial):pt  
#11 (random\* OR placebo\* OR blind\* OR 'control group'):ti,ab,kw  
#12 #10 OR #11  
#13 #9 AND #12

### AMED

1. 'colorectal cancer'/exp OR 'colorectal neoplasms'/de  
2. (colorectal ADJ3 (cancer\* OR neoplas\* OR carcinom\* OR tumor\* OR adenocarcinoma\*)):ti,ab  
3. ((colon OR rectal) ADJ3 (cancer\* OR carcinom\*)):ti,ab  
4. #1 OR #2 OR #3  
5. 'probiotics'/exp OR 'microbial therapy'/de  
6. (probiotic\* OR lactobacillus OR bifidobacterium OR saccharomyces OR 'streptococcus thermophilus'):ti,ab  
7. ('gut microbiota' OR 'intestinal flora' OR synbiotic\*):ti,ab  
8. #5 OR #6 OR #7  
9. #4 AND #8

### CancerLit

('colorectal neoplasms'[MeSH] OR (colorectal[tiab] AND (cancer\*[tiab] OR neoplas\*[tiab] OR carcinom\*[tiab] OR tumor\*[tiab] OR adenocarcinoma\*[tiab]))) OR ((colon[tiab] OR rectal[tiab]) AND (cancer[tiab] OR carcinoma[tiab]))  
AND  
( 'probiotics'[MeSH] OR probiotic\*[tiab] OR lactobacillus[tiab] OR bifidobacterium[tiab] OR saccharomyces[tiab] OR 'microbial therapy'[tiab] OR 'gut microbiota'[tiab] OR synbiotic\*[tiab])  
AND  
(randomized controlled trial[pt] OR random\*[tiab] OR placebo[tiab] OR 'clinical trial'[tiab] OR 'control group'[tiab])

### AACR

1. MAINSUBJECT:( 'colorectal cancer' OR 'colorectal neoplasms')  
2. (('colorectal' OR 'colon' OR 'rectal') AND ('carcinoma' OR 'adenocarcinoma' OR 'microsatellite instability')):Abstract  
3. ICD-O: (C18\* OR C19\* OR C20\* OR C21\*)  
4. #1 OR #2 OR #3  
5. MAINSUBJECT:( 'probiotics' OR 'gut microbiome')  
6. (probiotic\* OR 'Lactobacillus' OR 'Bifidobacterium' OR 'fecal microbiota transplant'):Title/Abstract  
7. ('short-chain fatty acids' OR 'butyrate' OR 'TLR4 signaling'):Abstract  
8. #5 OR #6 OR #7

### CBM (English translation of the search terms used)

#1 Subject terms: ('Colorectal Neoplasms'[Subject] OR 'Colon Neoplasms'[Subject] OR 'Rectal Neoplasms'[Subject])

#2 Free terms: ('colorectal cancer' OR 'colon cancer' OR 'rectal cancer' OR 'large bowel cancer' OR 'CRC')

#3 Colorectal cancer group: (#1 OR #2)

#4 Subject terms: ('Probiotics'[Subject] OR 'Lactobacillus'[Subject] OR 'Bifidobacterium'[Subject])

#5 Free terms: ('probiotics' OR 'lactobacillus' OR 'bifidobacterium' OR 'microbial preparations' OR 'intestinal flora regulators')

#6 Probiotics group: (#4 OR #5)

#7 Treatment-related terms: ('adjuvant therapy' OR 'combination therapy' OR 'postoperative therapy' OR 'adjuvant chemotherapy' OR 'adjuvant radiotherapy')

#8 Study type limitation: ('meta-analysis' OR 'meta analysis' OR 'systematic evaluation' OR 'systematic review')

#9 Final search formula:

(#3 AND #6 AND #7 AND #8)

NOT ('Animal Experiment'[Subject] OR 'Case Reports'[Subject])

## CBM

#1 主题词: ('结直肠肿瘤'[主题词] OR '结肠肿瘤'[主题词] OR '直肠肿瘤'[主题词])

#2 自由词: ('结直肠癌' OR '结肠癌' OR '直肠癌' OR '大肠癌' OR 'CRC')

#3 结直肠癌组: (#1 OR #2)

#4 主题词: ('益生菌'[主题词] OR '乳酸菌'[主题词] OR '双歧杆菌'[主题词])

#5 自由词: ('益生菌' OR '乳酸杆菌' OR '双歧杆菌' OR '微生物制剂' OR '肠道菌群调节剂')

#6 益生菌组: (#4 OR #5)

#7 治疗相关词: ('辅助治疗' OR '联合治疗' OR '术后治疗' OR '化疗辅助' OR '放疗辅助')

#8 研究类型限定: ('Meta分析' OR '荟萃分析' OR '系统评价' OR '系统综述')

#9 最终检索式:

(#3 AND #6 AND #7 AND #8)

NOT ('动物实验'[主题词] OR '病例报告'[主题词])

Figure S1. Risk of bias map for included studies.



