



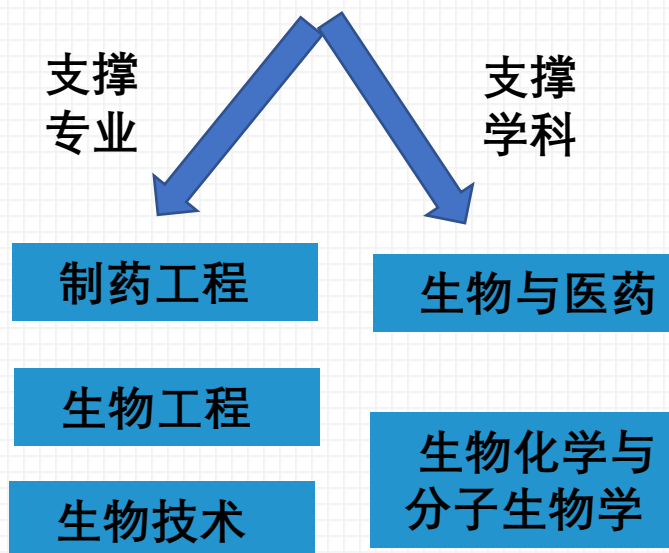
# 内蒙古特色药用资源开发与 生物技术制药团队

# 一、团队介绍



内蒙古农业大学  
其 志 日 新

## 内蒙古特色药用资源开发与 生物技术制药团队



1

团队致力于内蒙古特色药用资源开发和新药研发

2

团队共有10名教师，累计培养硕士和博士60余名

3

主持国家基金10项，国际合作项目1项，完成内蒙古杰出青年基金2项，发表SCI收录论文18篇，获得发明专利4项

4

2021年团队被评为自治区教育厅创新团队

5

与山东大学、中国海洋大学、内蒙古中药研究所建立合作关系

## 二、学术带头人



内蒙古农业大学  
其 德 无 量

### 团队四大研究方向

1

- 中蒙药特色资源的开发和利用（王玉珍 刘竟然 李国斌）

2

- 微生物特色药用资源开发和利用（王玉珍 巩培 马敏）

3

- 多肽与基因工程药物（娜黑芽、万方，尹俊）

4

- 药物靶标研究（万方，杨帆）



王玉珍，教授，1976年8月出生，内蒙古鄂尔多斯市达拉特旗人，博士研究生导师，芝加哥大学访问学者，内蒙古农业大学生命科学学院副院长，生物学一级学科负责人，内蒙古免疫学会副理事长，内蒙古生物工程学会副理事长，中国免疫学会高级会员，曾获得内蒙古自治区青年科技奖，被评为内蒙古自治区科协“优秀学会工作者”，入选511“优秀专业技术人才库”，获得内蒙古“青年科技领军人才”称号。

### 三、学术骨干



内蒙古农业大学  
其 德 之 行 必 重



**万方**，教授，博士生导师，曾担任美国威斯康辛大学麦迪逊分校生物技术系基因组编辑实验室主任。内蒙古自治区“草原英才”，中国抗癌协会肿瘤免疫代谢委员会专业委员，内蒙古生物工程学会及内蒙古神经科学学会常务理事。



**尹俊**，教授，博士生导师，政协内蒙古自治区第十二届委员会委员，内蒙古遗传学会副理事长，主讲本科生《基因工程》、《进化生物学》和研究生《基因组学与蛋白质组学》。



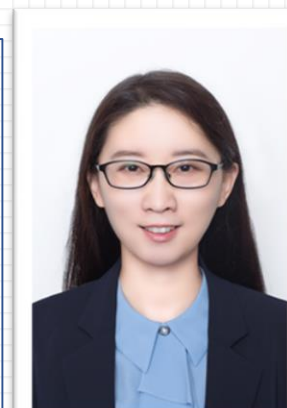
**杨帆**，讲师，博士。美国奥本大学生物医学专业毕业。目前主要对能量代谢调控进行研究。主讲免疫学、生物技术制药。



**那仁格日勒**，讲师，博士。博士。内蒙古大学生命科学学院生物化学与分子生物学专业毕业。研究领域为酮病奶牛免疫机制。主讲生物化学课程。



**娜黑芽**，讲师，博士。军事医学科学院药物化学专业毕业。目前主要研究领域为新型抗菌肽的设计及生物活性评价。主讲药物化学、专业英语课程。



**马敏**，讲师，博士。内蒙古大学动物学专业毕业。目前主要研究领域为成脂/成骨分化平衡骨质疏松。主讲化工原理课程。

# 四、主要进展和最新成果

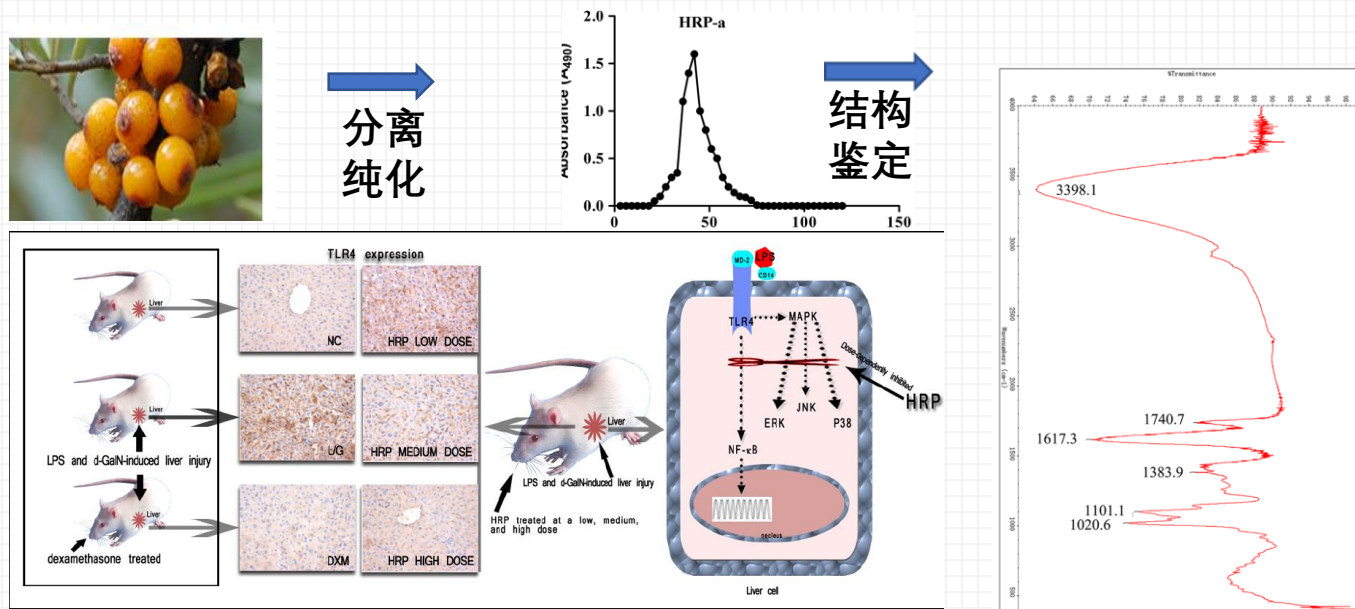


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MONGOLIA AGRICULTURAL UNIVERSITY

## 1. 中蒙药特色资源的开发和利用

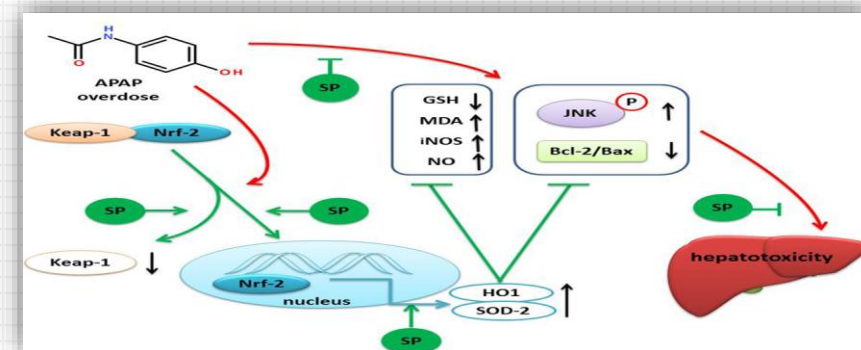
沙棘活性多糖的分离纯化、结构鉴定和生物学功能研究:系统研究了新型沙棘活性多糖的免疫调节活性和抗炎抗氧化的药理学机制。研究成果发表在民族药物学领域权威期刊Journal of Ethnopharmacology和国际著名学术期刊Food Function, 和欧洲权威杂志Phytomedicine上。

沙棘多糖免疫药理活性研究

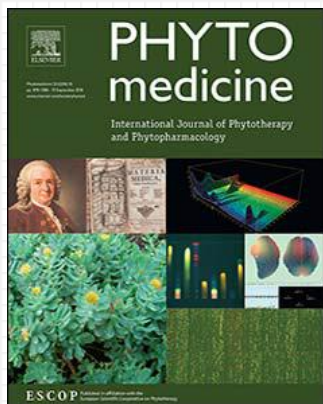


沙棘多糖对急性肝衰竭的保护作用

首次揭示了沙棘多糖 HRP 的抗氧化作用是通过 Nrf-2 信号通路的调控实现的。



沙棘多糖对药物诱导的肝脏氧化应激的缓解机制



# 四、主要进展和最新成果

## 1. 中蒙药特色资源的开发和利用

研究了黄酮单体药物山柰酚对肠道炎症的保护作用和机制，创新性地提出山柰酚通过重塑肠道菌群、调节肠道代谢物来发挥保护作用。研究成果发表在国际免疫学学会联合会(IUIS)的官方期刊 Frontiers in Immunology (IF=7.5)，2021年发表以来累计关注人数3000余人，

ORIGINAL RESEARCH article  
Front. Immunol., 22 July 2021 | <https://doi.org/10.3389/fimmu.2021.679897>

**Kaempferol Alleviates Murine Experimental Colitis by Restoring Gut Microbiota and Inhibiting the LPS-TLR4-NF-κB Axis**

Yifan Qu<sup>1,2</sup>, Xinyi Li<sup>3</sup>, Fengying Xu<sup>1</sup>, Shimin Zhao<sup>1</sup>, Xuemei Wu<sup>1</sup>, Yuzhen Wang<sup>3\*</sup> and Jiming Xie<sup>2\*</sup>

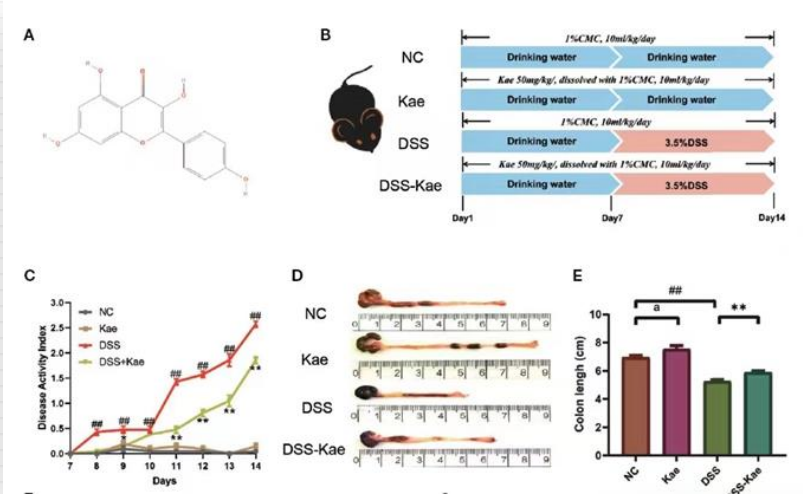
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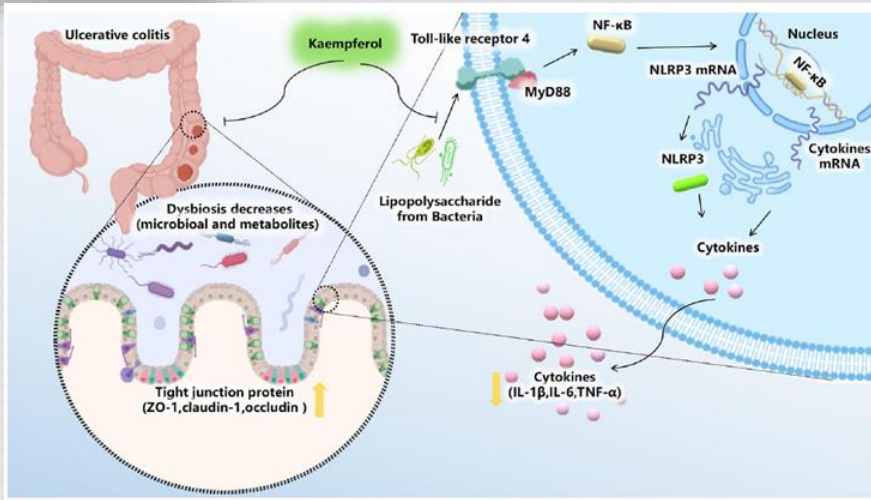
View Article Impact

## 山柰酚对溃疡性结肠炎的缓解作用及其多靶点作用机制的研究



通过DSS诱导溃疡性结肠炎，通过灌胃给药，揭示了山柰酚对实验诱导的结肠炎的缓解作用。

首次揭示了山柰酚对肠道菌群的重塑以及对肠道 *L. casei* Zhang对LPS-TLR4-MAPK 信号通路的调控。



# 四、主要进展和最新成果



内蒙古农业大学  
JING MENG JI SHI JI SHI JI SHI

## 2. 微生物特色药用资源开发和利用

研究了内蒙古农业大学特色乳酸菌 *L. Casei* Zhang、乳双歧杆菌V9对肠肝轴的免疫调控机理及其对肠道和肝脏炎症的抑制作用。研究成果发表在欧洲营养学杂志，国际免疫药理学杂志和AMB Express.

12.9 2区 IF:5.614 Eur J Nutr. 2016 Mar; 55 (2), 821-831. doi: 10.1

Probiotic Lactobacillus casei Zhang reduces p inflammation in a rat model of acute liver fail

益生菌干酪乳杆菌Zhang可在急性肝衰竭的大鼠模型中减少促炎细胞因子

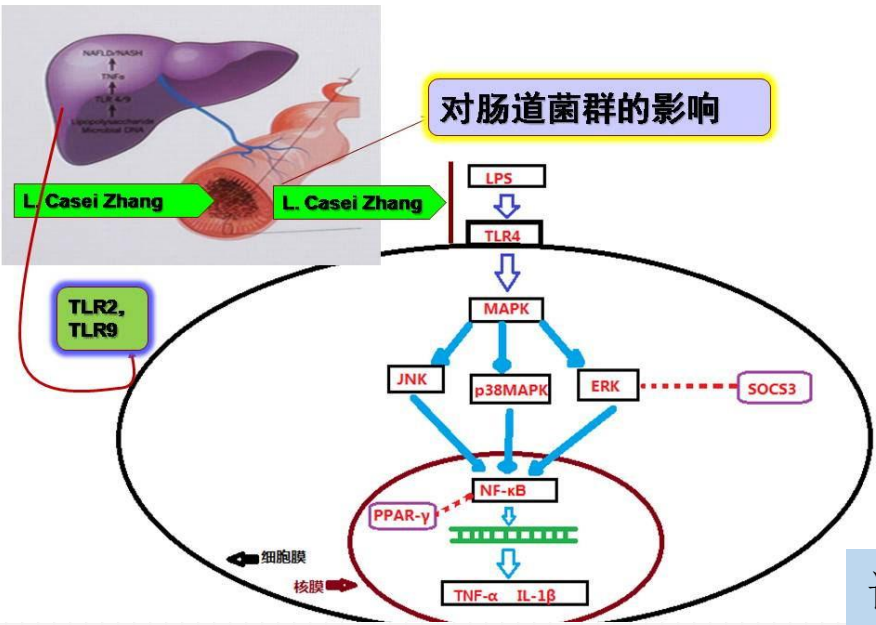
Authors Yueshen Wang, Jiming Xie, Yong Zhang, Heping Zhang

### Abstract

PURPOSE: In this study, we sought to find the effects and mechanisms of probiotic Zhang (*L. casei* Zhang) on the pro-inflammatory cytokine production and hepatic in a rat model of acute liver failure induced by lipopolysaccharide (LPS) and d-gala METHOD: Male Wistar rats were orally administrated with or without *L. casei* Zhi to challenge with LPS and GaN. Dexamethasone administrated group serving as a inflammation control. Serum, intestinal and liver samples were collected 8 h after



首次揭示*L. casei* Zhang通过负向调控宿主肠道和肝脏的TLR4信号转导通路，抑制了LPS/D-GALN诱导的肝脏细胞的凋亡。



首次揭示了*L. casei* Zhang对LPS-TLR4-MAPK 以及PPAR信号通路的调控。

该部分工作由研究生李云旭负责。研究工作获得中国博士后基金二等奖以及国家自然科学基金项目资助，发表SCI收录论文3篇。获得内蒙古自治区优秀论文。

## 四、主要进展和最新成果

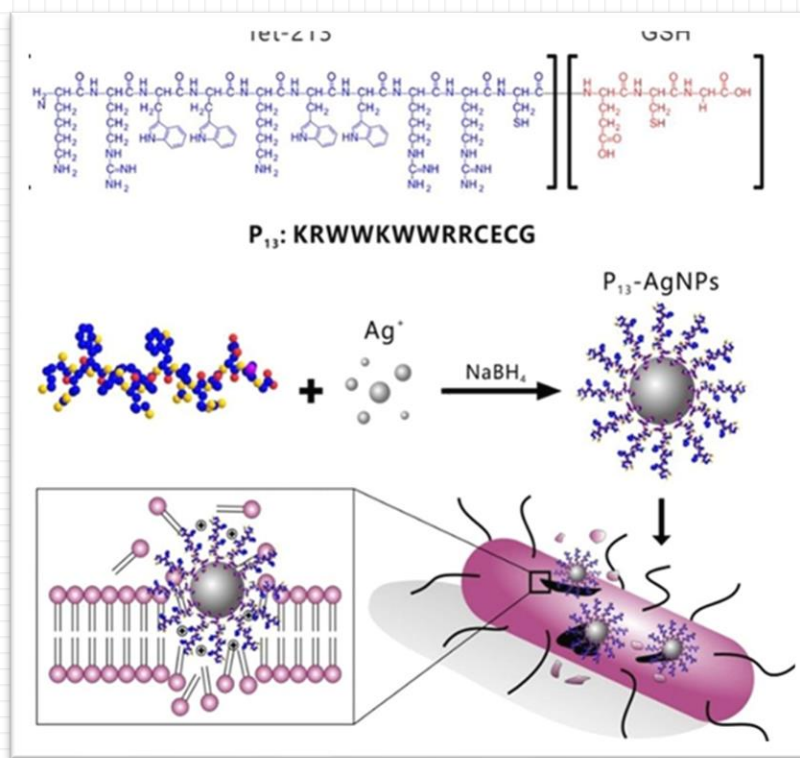


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JOURNAL OF INNER MONGOLIA AGRICULTURAL UNIVERSITY

### 3. 多肽与基因工程药物的研究

通过药物化学与生物技术学科的交叉，将人工合成的抗菌肽（AMP）与银纳米粒子（AgNPs）结合，得到的新型抗菌肽P-13@AgNPs，对大肠杆菌、金黄色葡萄球菌和短小芽孢杆菌的最低抑菌浓度（MIC）高达  $7.8 \mu\text{g/mL}$ ，对铜绿假单胞菌的MIC为  $15.6 \mu\text{g/mL}$ 。关于抗菌肽的研究我们获得2项专利，发表SCI收录论文2篇，其中包括1篇2区的研究论文。在国内同类研究中处于领先地位。

研究受到国家自然科学基金“基于O-磷酸化修饰的新型抗菌肽的设计、合成与生物活性评价”和内蒙古自治区高等学校项目“基于疏水性酪氨酸构建两亲性  $\alpha$ -螺旋抗菌肽及其作用机制研究”的资助。



Gao, J.; Na, H, et al. One step synthesis of antimicrobial peptide protected silver nanoparticles: The core-shell mutual enhancement of antibacterial activity. *Colloids and surfaces. B, Biointerfaces* 2019, 186, 110704. (中科院分区: 2区; 影响因子: 5.268)

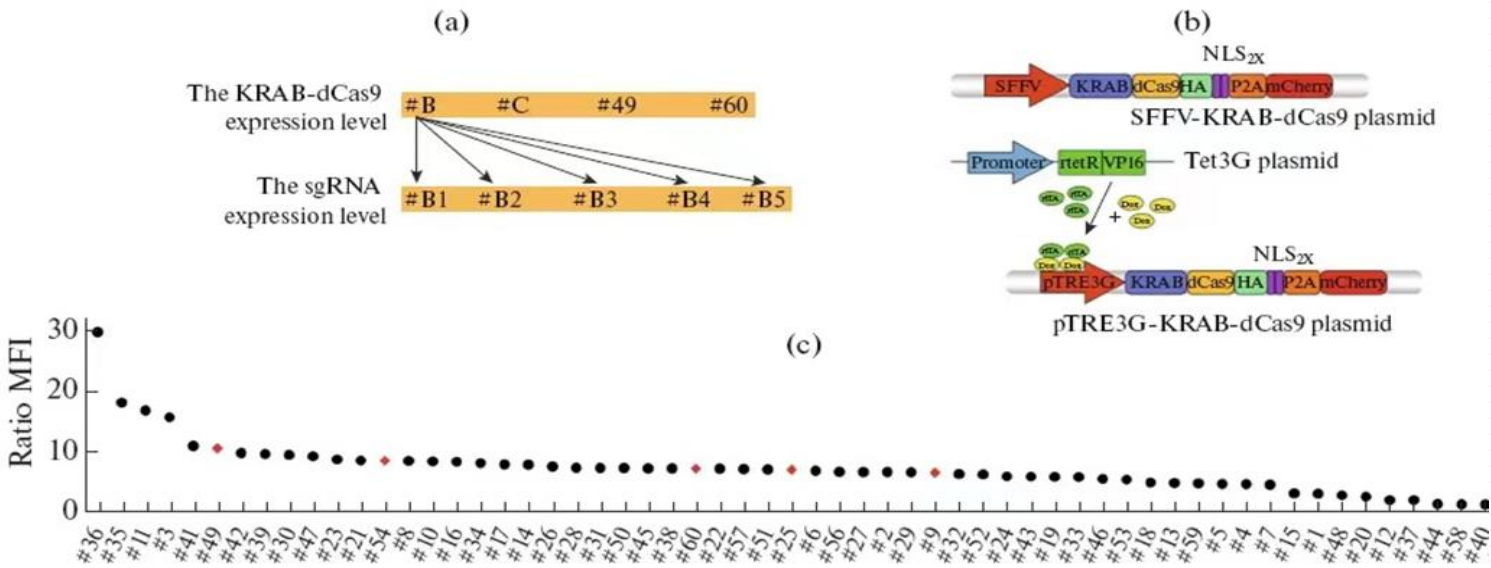
# 四、主要进展和最新成果



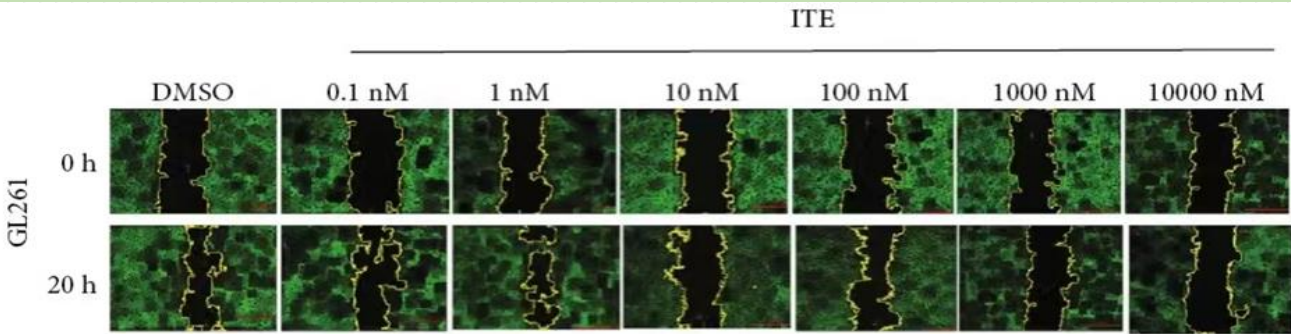
内蒙古农业大学  
MONGOLIA AGRICULTURAL UNIVERSITY

## 4. 药物靶标研究

采用Crisper-Cas9系统进行药物作用靶标的精准筛选。我们建立并优化了Crisper的敲低系统，并证明sgRNA的水平是影响该系统效率的主要因素。相关研究技术策略在期刊Molecular Biology上发表，培养博士研究生3名，获得了国家自然科学基金的资助。该研究处于国内一流水平。建立的技术平台为药物筛选奠定了坚实基础，揭示了色氨酸代谢产物ITE的新型药理活性。



## Cas9 和sgRNA 影响CRISPER-i敲低效率的研究



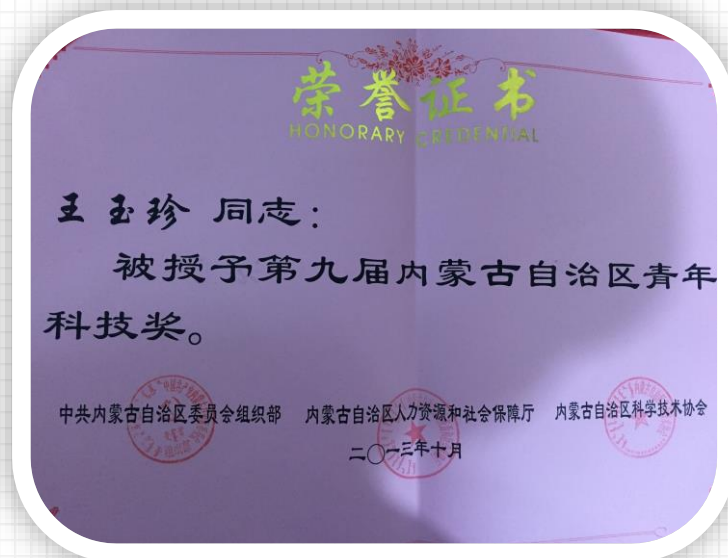
ITE能够抑制肿瘤细胞迁移

## 五、获得奖励和发表文章情况



内蒙古农业大学  
MONGOLIA AGRICULTURAL UNIVERSITY

团队学术带头人获得内蒙古青年科技奖；团队连续两年指导学生在“挑战杯”全区大学生课外科技作品竞赛中获得一等奖。



五、获得奖励和发表文章情况



Lipid in Tumor

Fan Yan

Yan et al. AMB Expr (2020) 10:101  
https://doi.org/10.1186/s13568-020-01038-y

ORIGINAL ARTICLE

Probiotic Bifidobacterium V9 alleviates hepatic steatosis and improves lipid metabolism in mice with non-alcoholic fatty liver disease

Yan Yan<sup>1†</sup>, Chunyan Liu<sup>1†</sup>, Shimin Zhao<sup>1</sup>, Xinyi Li<sup>2</sup>, and Guofen Zhao<sup>1\*</sup>

Abstract

Breakthroughs have been made in immunotherapy field focusing on tumor immunity, metabolism of tumor-associated lipids, and lipid metabolism of tumor cells. Antitumor immunity, metabolism of tumor-associated lipids, and lipid metabolism of tumor cells are important roles in tumor biology. Especially the B cells that present in the tumor lymphoid structures. Due to the lipid metabolisms of tumor B cells, this chapter mainly summarizes the lipid metabolism of tumor B cells, and tumor microenvironment factors that potentially affect lipid metabolism, focusing on hypoxia, competition, as well as lipids that affect B cell function, including geranylgeranyl pyrophosphate and short-chain fatty acids.

Abstract

Both steatosis and inflammation are key pathological features of non-alcoholic fatty liver disease (NAFLD). Probiotics are beneficial for the prevention (V9) is a newly isolated strain with favorable properties for NAFLD. Our results showed that administration of V9 significantly reduced the accumulation of hepatic lipids. Serum levels of glucose were also decreased. SREBP-1c and FAS was reduced, and the hepatic V9 administration. V9 suppressed the production of inflammatory factors. The anti-inflammatory effects of V9 were found in NLRP3, and ASC mRNA. Furthermore, the active B cells were significantly increased. These results indicate that *Bifidobacterium lactis* V9 suppresses inflammation through AMPK and TLR-NF- $\kappa$ B signaling pathway.

Keywords

Probiotics, NAFLD, AMPK, TLR, NF- $\kappa$ B, V9 supplementation alleviates HFD-induced disorder.

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\*Correspondence: wangyuzhen817@126.com; guofenzhao@126.com  
†Yan Yan and Chunyan Liu contributed equally to the work.  
1 College of Life Science, Inner Mongolia Agricultural University, Hohhot 010018, People's Republic of China  
Full list of author information is available at the end of the article



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Kaempferol Alleviates Experimental Colitis by Regulating the Gut Microbiota and Lipid Metabolism

Yifan Qu<sup>1,2</sup>, Xinyi Li<sup>2</sup>, and Jiming Xie<sup>2\*</sup>

Intestinal microbiota plays a key role in regulating the gut immune system. Kaempferol (Kae) is a natural polyphenolic compound with anti-inflammatory and immunomodulatory properties. In this study, we investigated the effects of Kae on experimental colitis. Kae pretreatment significantly reduced the severity of DSS-induced colitis. Kae pretreatment significantly reduced the production of inflammatory factors and the expression of NF- $\kappa$ B signaling pathway. Kae pretreatment significantly increased the expression of tight junction proteins. Kae pretreatment significantly increased the expression of AMPK and TLR-NF- $\kappa$ B signaling pathway. Kae pretreatment significantly increased the expression of AMPK and TLR-NF- $\kappa$ B signaling pathway.

Received: 13 March 2017  
Accepted: 14 July 2017  
DOI: 10.1039/c7fo00399d  
rsc.li/food-function

Keywords: kaempferol, colitis, gut microbiota, lipid metabolism

Food & Function

PAPER

Cite this: Food Funct., 2017, 8, 3130

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1. Introduction

Seabuckthorn (*Hippophae rhamnoides* L.) has plenty of benefits both in economic and ecological fields.<sup>1</sup> In China, an artificial Seabuckthorn forest has been used in soil and water conservation in semi-arid hilly regions.<sup>2</sup> The berries are not only used in food products,<sup>3</sup> but also have anti-oxidative activities<sup>4</sup> and immunity enhancing properties.<sup>5</sup> Seabuckthorn seed oil, leaf

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†Yifan Qu and Xinyi Li contributed equally to the work.  
1 Clinical Laboratory, Inner Mongolia People's Hospital, Hohhot 010010, PR China  
2 College of Veterinary Medicine, Inner Mongolia Agricultural University, Hohhot 010018, PR China  
3 Electronic supplementary information (ESI) available. See DOI: 10.1039/c7fo00399d  
4 These authors contributed equally to the work.

ORIGINAL RESEARCH

9 Solid Metabolism in Tumor-Associated B Cells

Tumor-associated B cells (T-B cells) are a subset of B cells that are found in the tumor microenvironment. T-B cells are characterized by the presence of tumor-associated antigens on their surface. T-B cells are involved in the regulation of tumor immunity. T-B cells are characterized by the presence of tumor-associated antigens on their surface. T-B cells are involved in the regulation of tumor immunity.

9.2.1 B Cells with Antitumor Function

The presence of certain B cells in the tumor has been associated with a better prognosis. Earlier studies found that in some breast or ovarian cancer patients, tumor-infiltrated B cells were associated with a good prognosis [52]. Later, TLS that contains a GC was found to be correlated with improved survival in multiple cancer types. The prognostic significance of the tumor-related TLS was reviewed in depth by Sautès-Fridman et al. [53]. Originally discovered in hepatocellular carcinoma, numerous studies found that B cells/GCs' presence in the TLS correlated with prolonged survival in other types of cancers, including

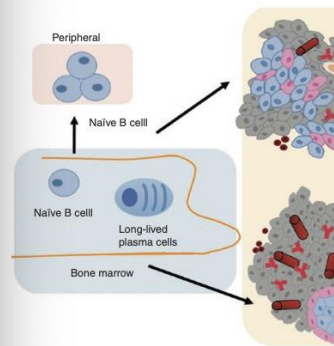


Fig. 9.2 Mature or immature TLS and tumor-associated B cells. A schematic of various tumor-associated B cell populations and TLS. The existence of mature B cells in tumors featuring germinal centers is associated with better prognosis, where B cells are selected and differentiated

Qu et al.

Kaempferol Alleviates Experimental Colitis

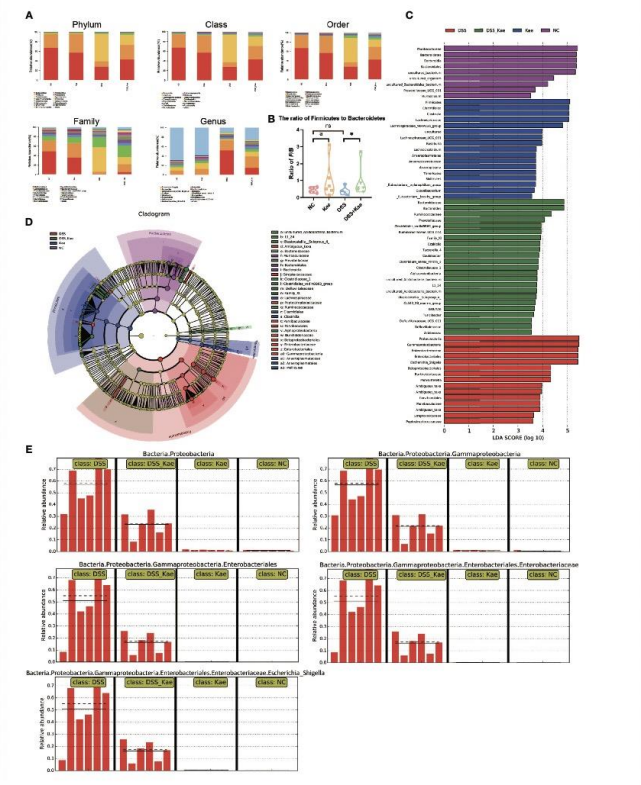


FIGURE 9 | (A) Taxonomic analysis of microbiota in fecal samples at the phylum, class, order, family, and genus levels. (B) Ratio of Firmicutes to Bacteroidetes in the gut microbiota. (C) LDA scores for bacterial taxa significantly enriched in gut microbiota from each group (LDA score > 3). (D) Cladogram illustrating the results of LEfSe analysis. (E) All-against-all algorithm of LDA coupled with LEfSe. Ratios are expressed as the mean  $\pm$  SEM, n = 6, analyzed using one-way ANOVA with Tukey post-hoc analysis. DSS (vs. DSS+Kae, \*P < 0.05); Kae (vs. NC, \*P < 0.05); ns, no significant difference. The significance of differences in taxonomic groups were assessed using the non-parametric factorial Kruskal-Wallis sum-rank test, n = 6. P < 0.05 was considered to indicate a significant difference between groups.

## 六、团队创新愿望



內蒙古農業大學  
美 麗 之 書 已 寫 真

秉承“勤奋求实、积极探索、锐意进取、不断创新”的科研精神，在已有研究的基础上进一步挖掘内蒙古特色药用资源，阐明药物作用机理并利用生物技术研发新药。

