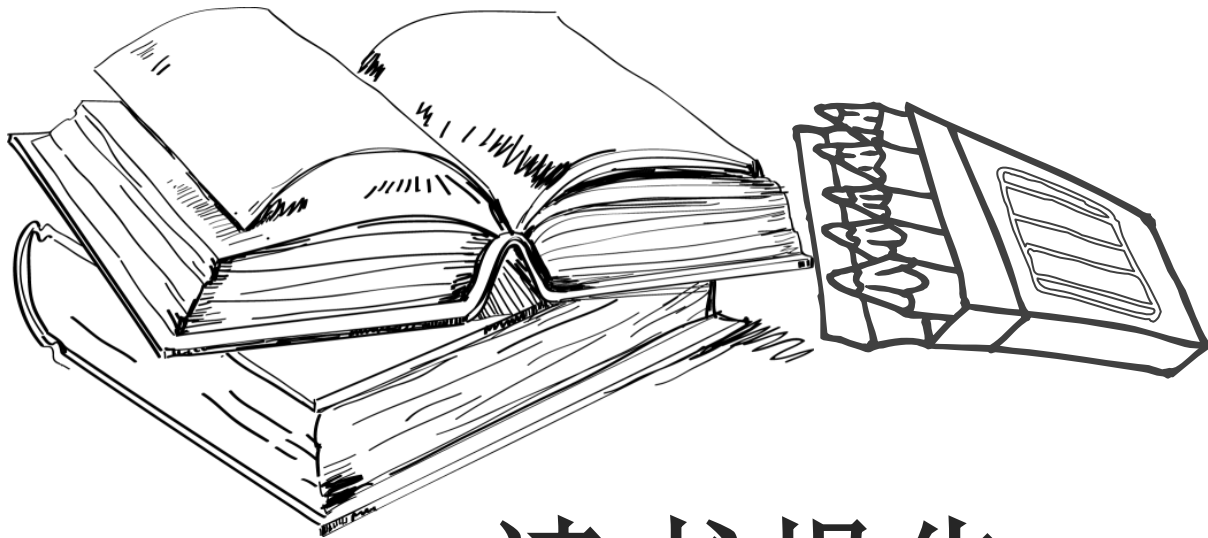




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High-fat diet induces aberrant hepatic lipid secretion in blunt snout bream by activating endoplasmic reticulum stress-associated IRE1/XBP1 pathway



Xiu-Fei Cao, Yong-Jun Dai, Ming-Yang Liu, Xiang-Yang Yuan, Cong-Cong Wang, Yang-Yang Huang, Wen-Bin Liu, Guang-Zhen Jiang*

Key Laboratory of Aquatic Nutrition and Feed Science of Jiangsu Province, College of Animal Science and Technology, Nanjing Agricultural University, No. 1 Weigang Road, Nanjing 210095, People's Republic of China

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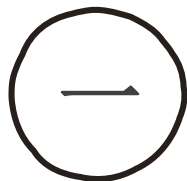
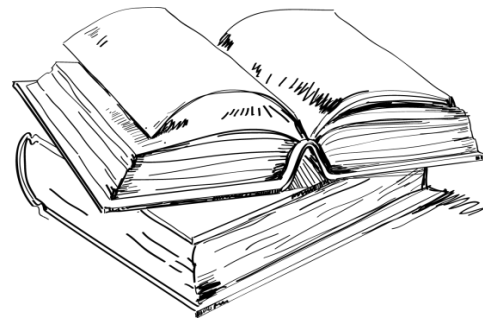
04

结论与分析



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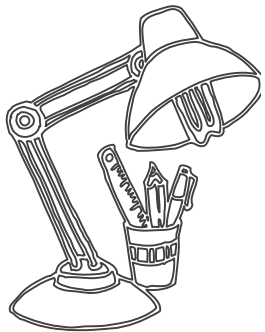
研究背景



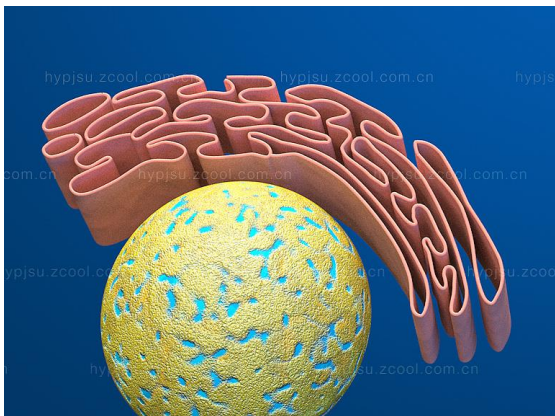
高脂

三、内质网应激

研究背景



团头鲂，又名**武昌鱼**，鲤科，鲂属。因其肉质鲜嫩，成活率高，生长快，抗病能力强，受到人们的广泛青睐，是我国重要的经济鱼类，具有很高的年产量。

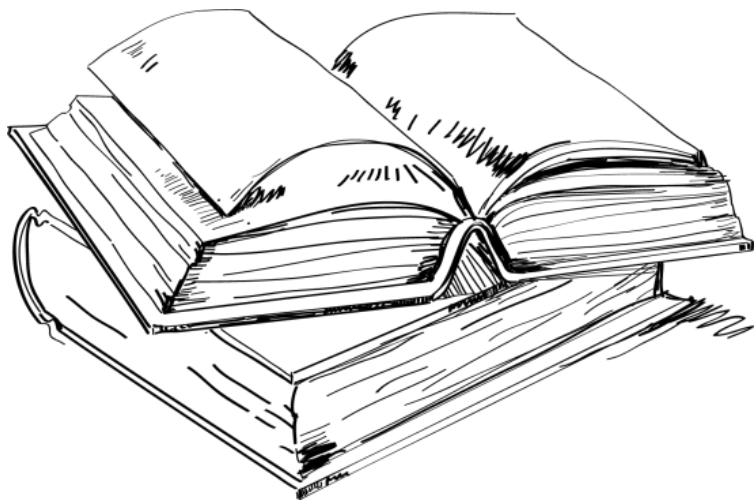


内质网是一种重要的细胞器，负责蛋白质加工、成熟和运输。研究其生理功能发生紊乱，会导致蛋白质折叠障碍和错误折叠，进而触发**内质网应激**。在这种情况下，**未折叠蛋白反应**（**UPR**）是保持细胞功能的关键。并且**IRE1 / XBP1**信号通路是各种物种中未折叠蛋白反应的高度保守分支。



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二

材料与方法

材料与amp;方法



90尾团头鲂
(初始体重为 $41.84 \pm 0.07\text{g}$)

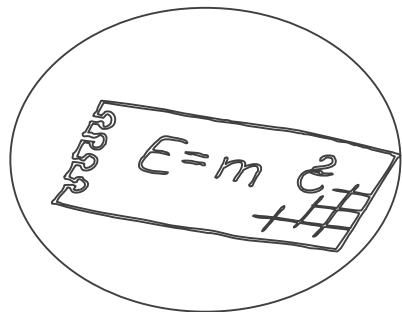
对照组 每组3个重复 实验组
15尾

标准饲料
脂肪含量为6%

高脂饲料
脂肪含量为11%

每天饱食投喂三次
(7:30、12:00和16:30)，
保持正常水温、溶解氧和
pH，饲养9周，饥饿24h后
进行取样。记录体重，取
血液和肝脏样品进行检测。

材料与amp;方法



生长性能和饲料利用率

比较终末体重、饲料效率、采食量、脂质增加量等指标。



肝脏和血浆生化指标

采用试剂盒检测肝脏和血浆中甘油三酯、总胆固醇和游离脂肪酸等指标。



组织学分析

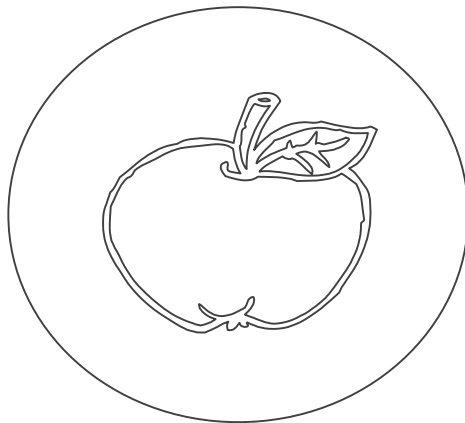
对肝脏切片进行油红O和H·E染色，然后组织学评估。

材料与amp;方法



原代肝细胞分离与培养

采用油酸和IRE1抑制剂对原代肝细胞进行处理,检测生化指标。



实时荧光定量

通过RT-PCR,对肝脏中脂质转运和内质网应激相关基因的表达量进行检测。



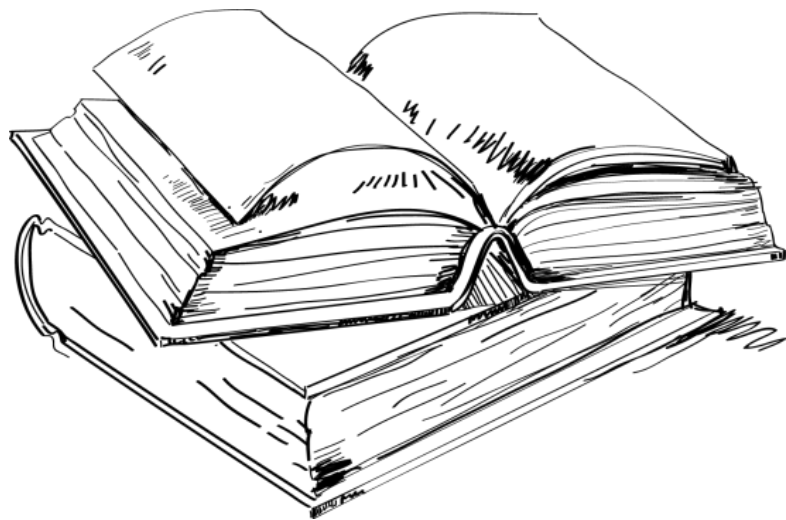
WB分析相关蛋白表达量

通过WB检测肝脏和原代肝细胞中内质网应激相关蛋白的表达量。



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三

实验结果

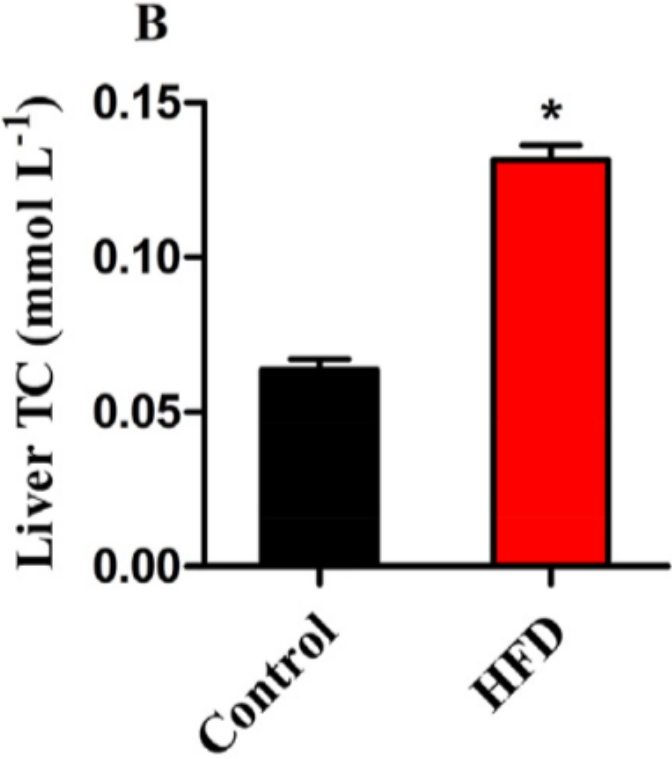
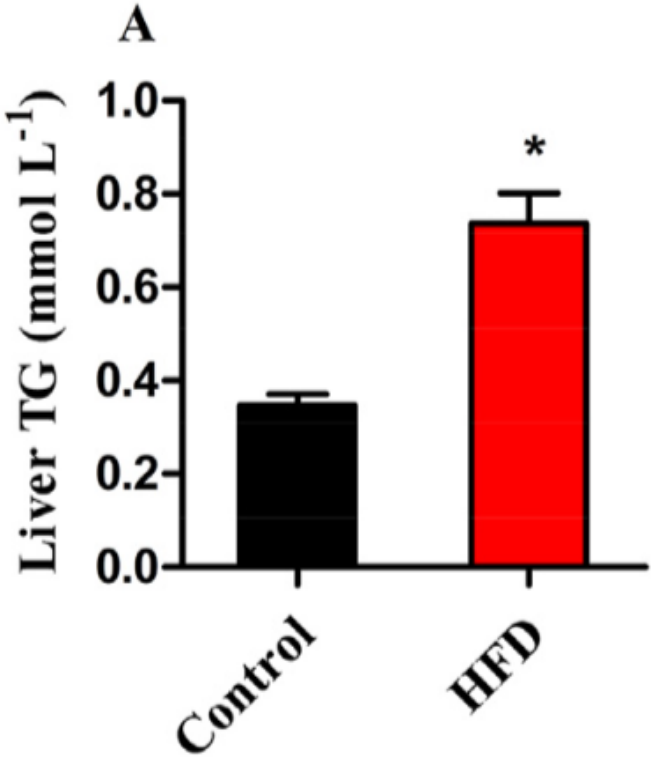
1.生长性能和饲料利用率

Table 1

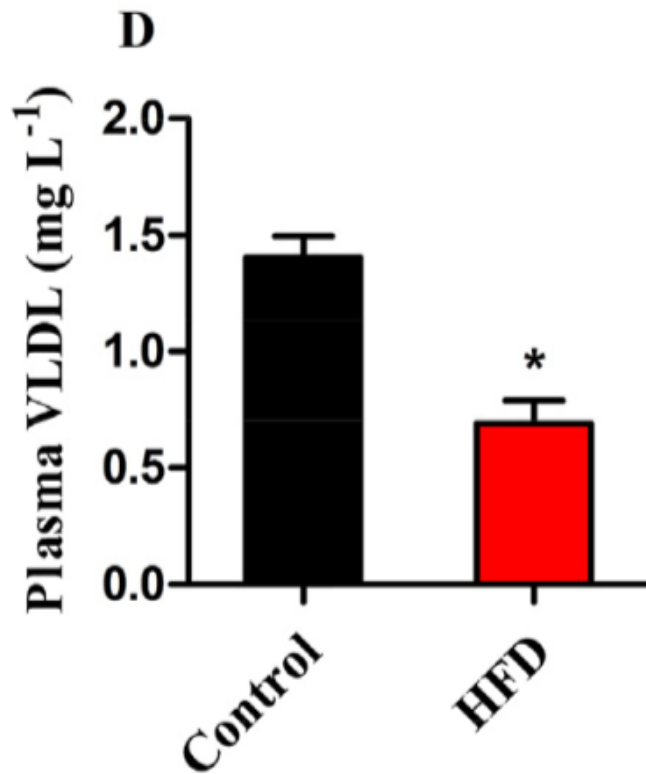
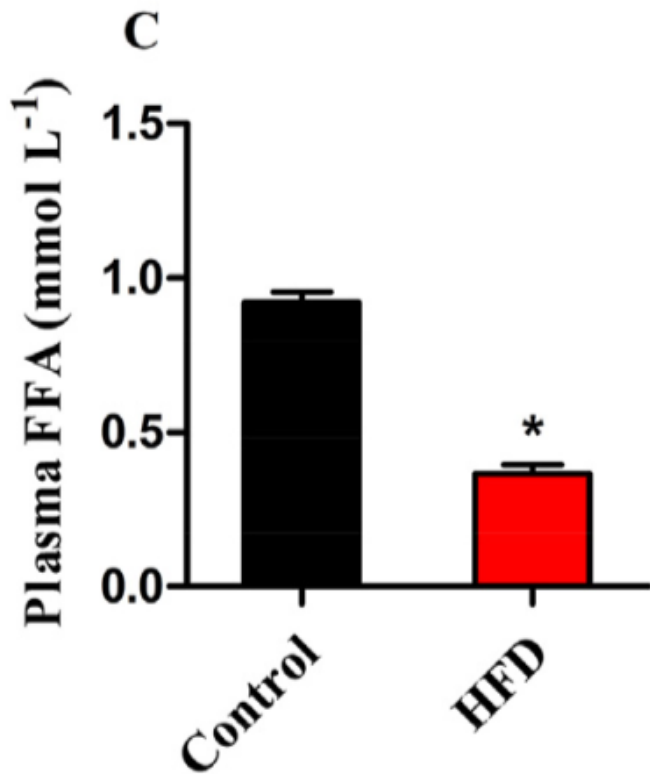
Growth and feed utilization of blunt snout bream fed experimental diets for 9 week.

	Control	HFD
Initial body wet weight (g)	41.84 ± 0.16	41.84 ± 0.06
Average body weight (g) ^a	95.81 ± 1.86	96.35 ± 0.71
Survival rate (%) ^b	97.77 ± 2.22	100 ± 0.00
Feed efficiency ^c	0.70 ± 0.02	0.80 ± 0.02*
Feed intake (g/fish) ^d	155.46 ± 4.07	136.88 ± 7.44
Lipid intake (g/fish) ^e	9.73 ± 0.25	15.88 ± 0.86*
Lipid gain (g/fish) ^f	10.65 ± 0.31	13.44 ± 0.26*
Energy intake (MJ/kg) ^g	2.91 ± 0.08	2.81 ± 0.15
Energy gain (MJ/kg) ^h	0.92 ± 0.03	1.03 ± 0.01*

2.肝脏生化指标



2.血浆生化指标

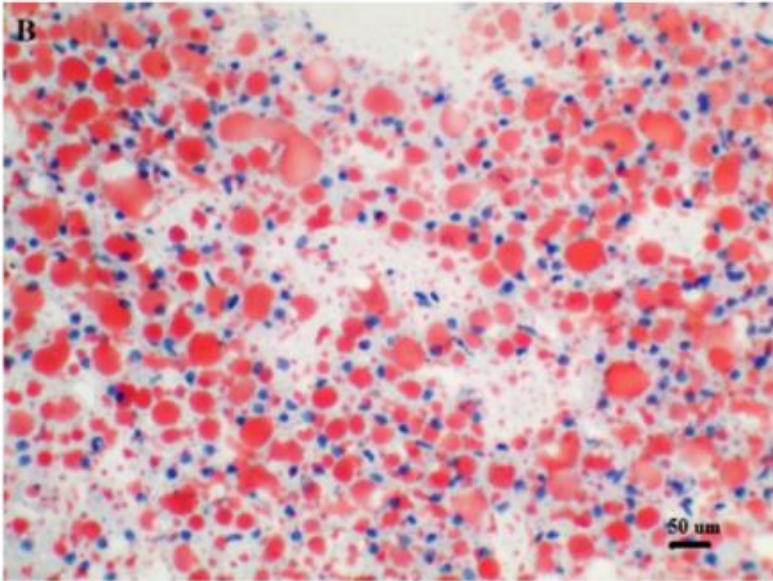
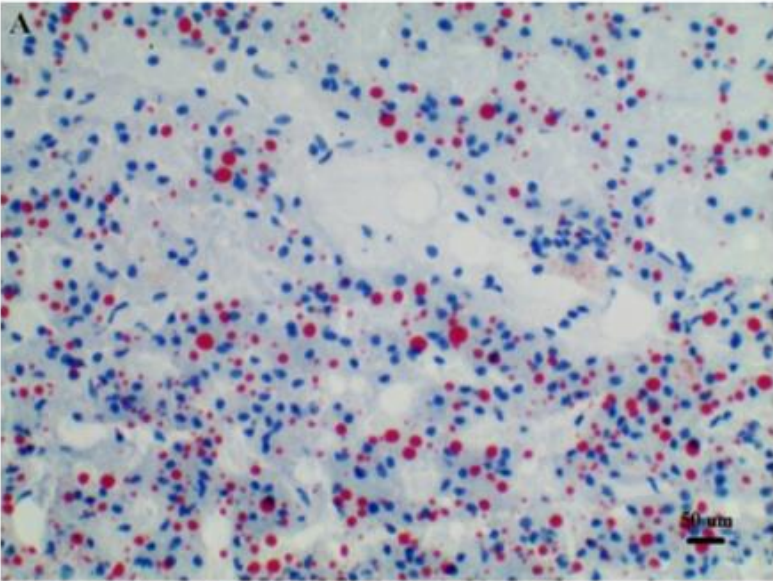


3.肝脏组织学分析

Oil Red O staining

Control

HFD

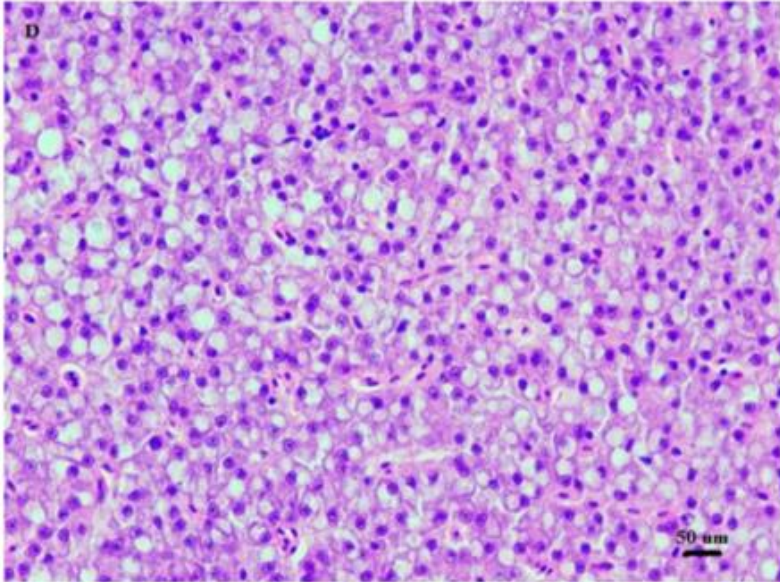
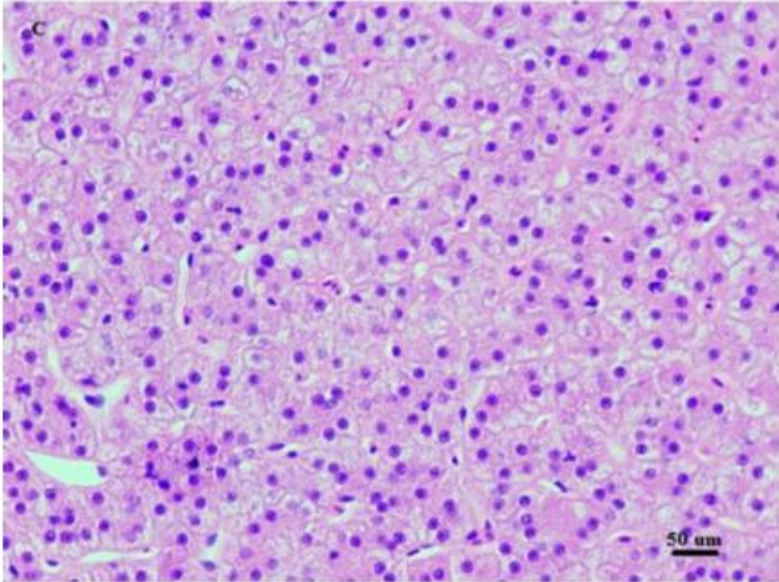


3.肝脏组织学分析

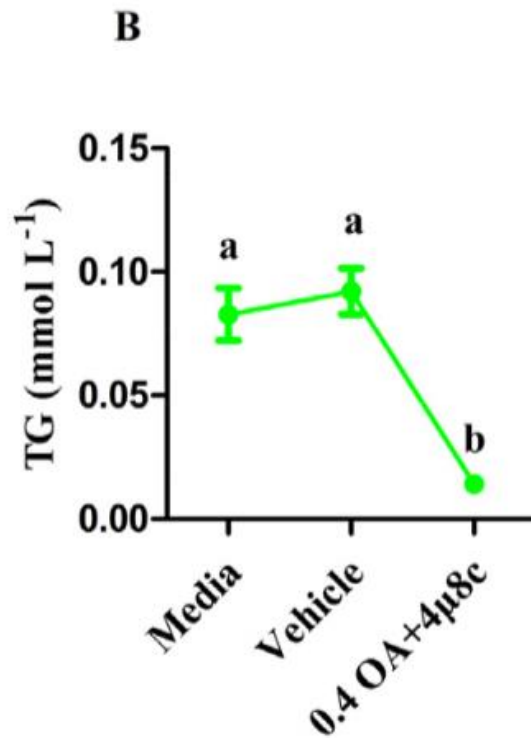
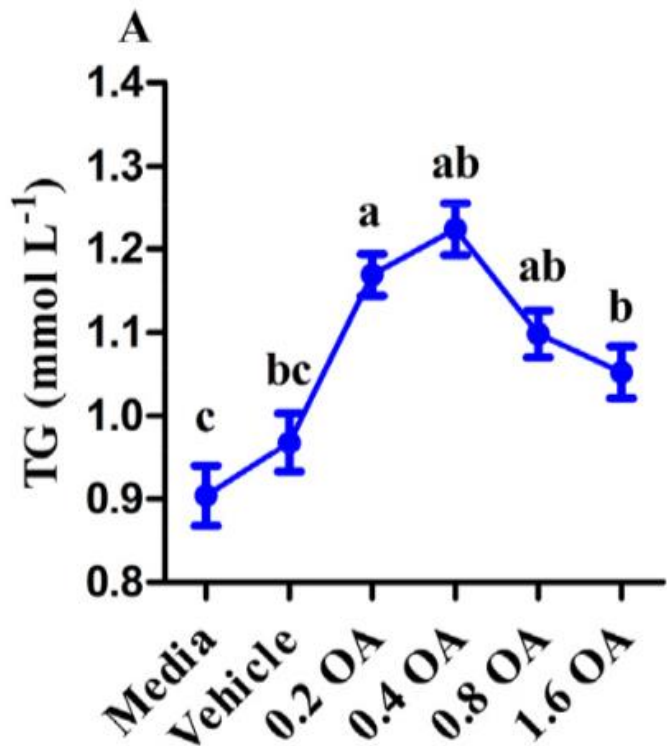
H&E staining

Control

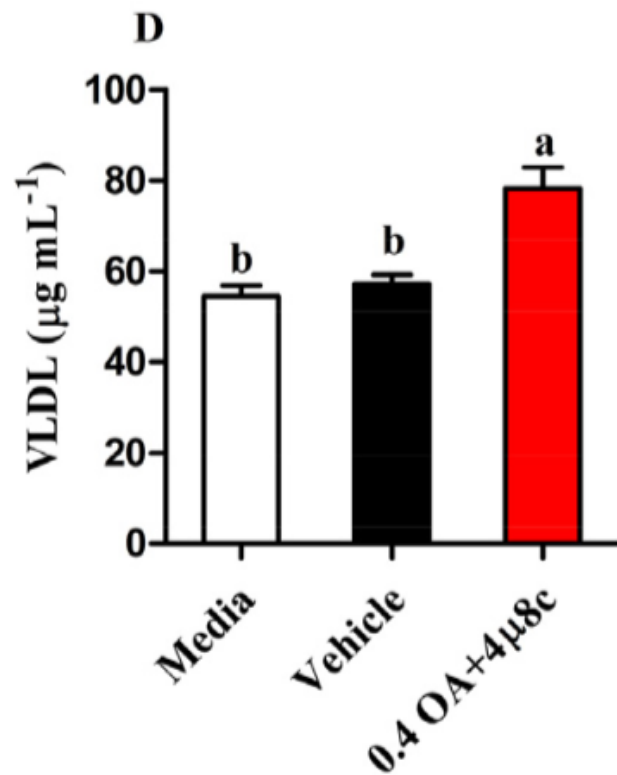
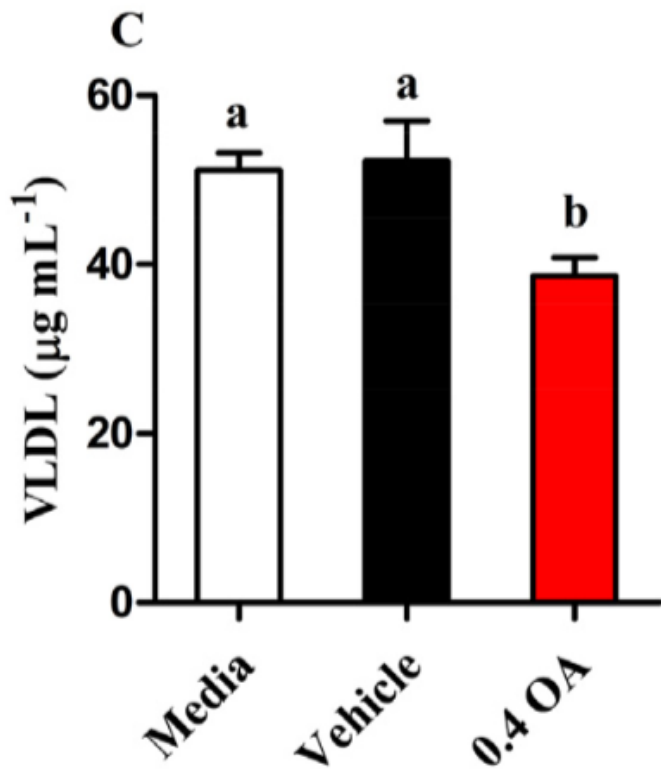
HFD



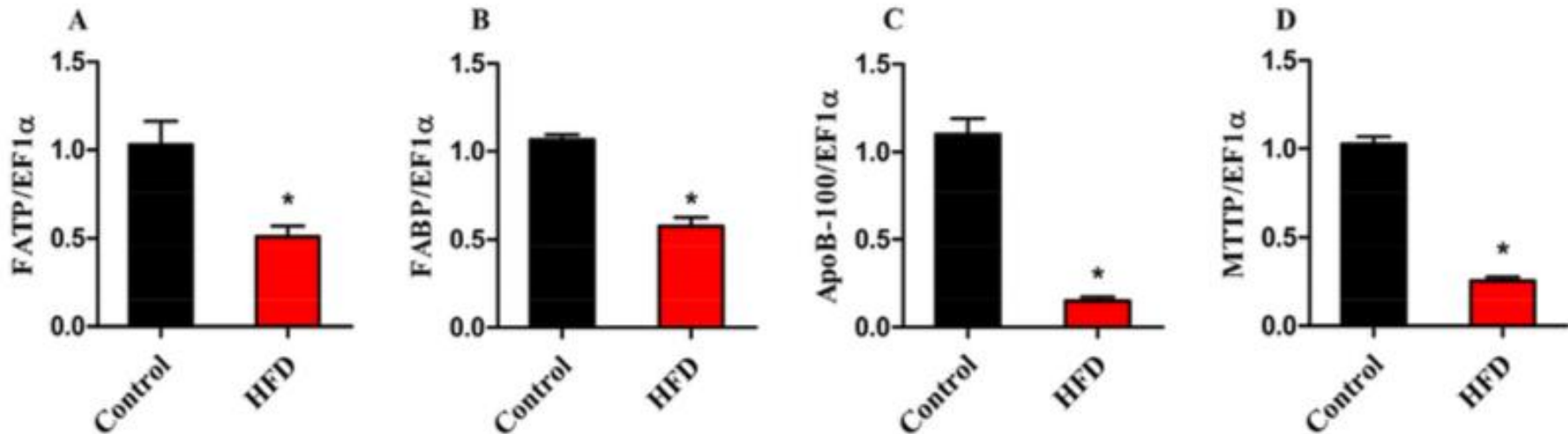
4.原代肝细胞生化指标



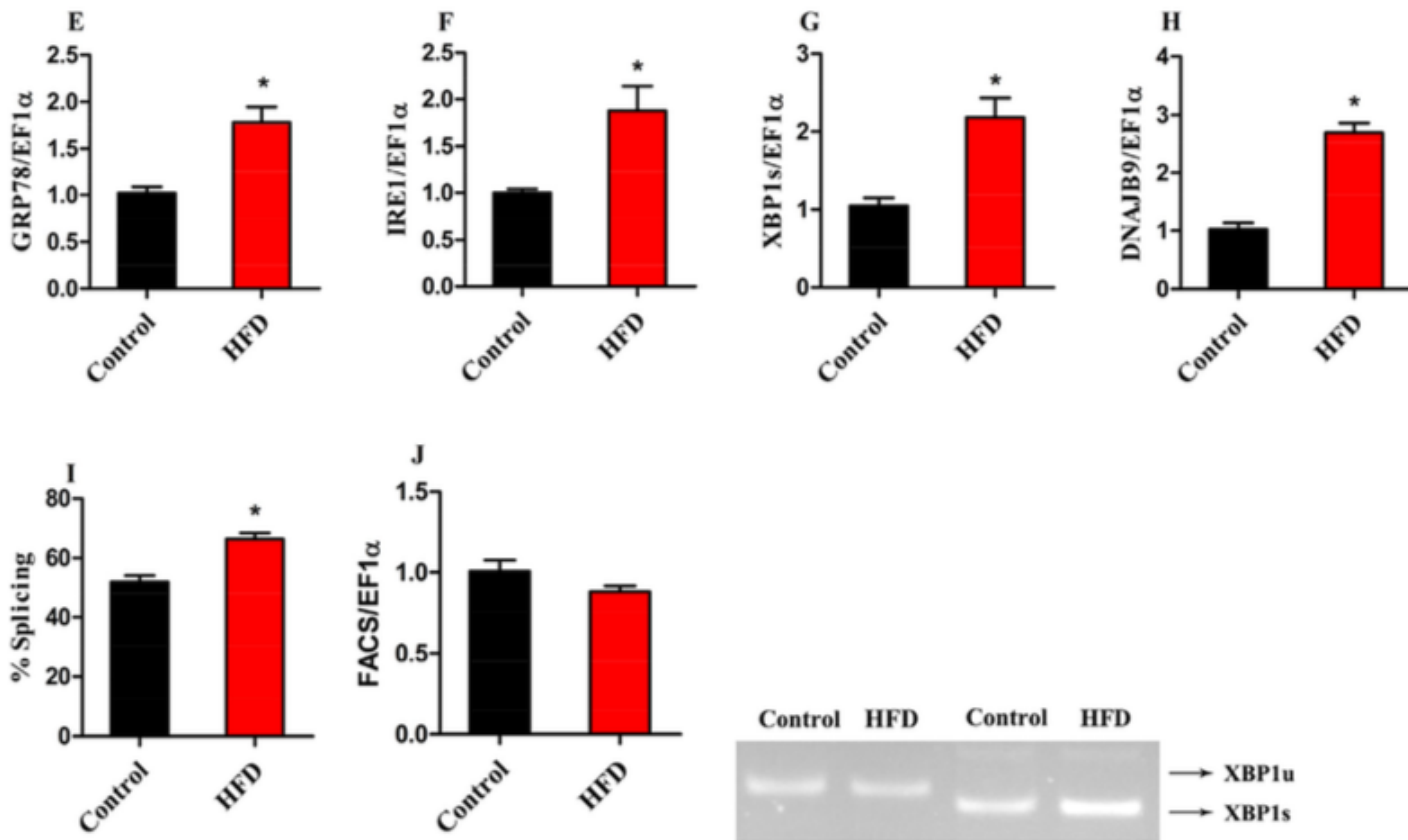
4.原代肝细胞生化指标



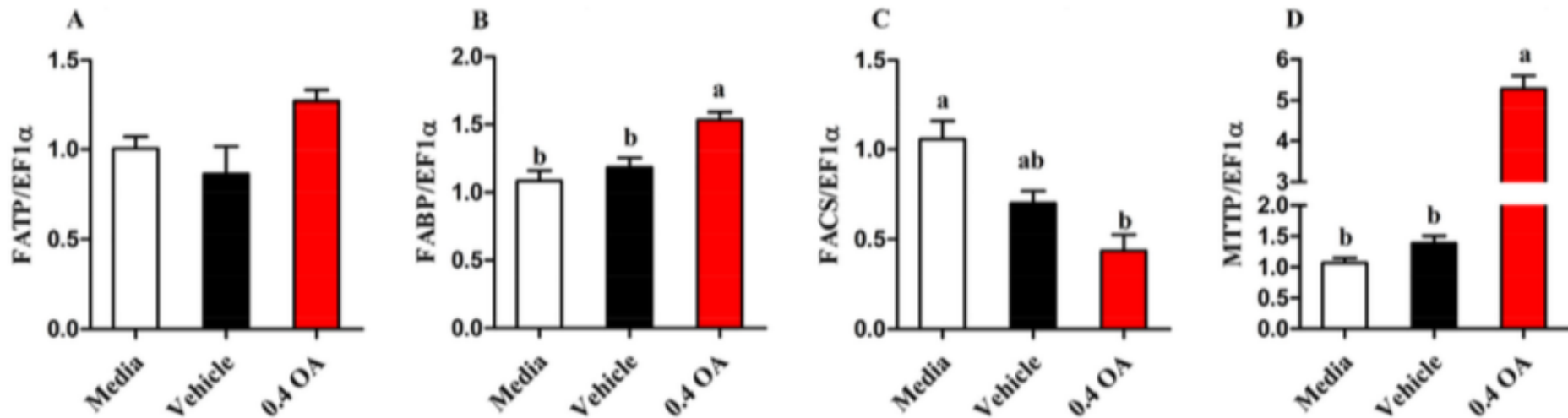
5.肝脏脂质转运和内质网应激相关基因表达量



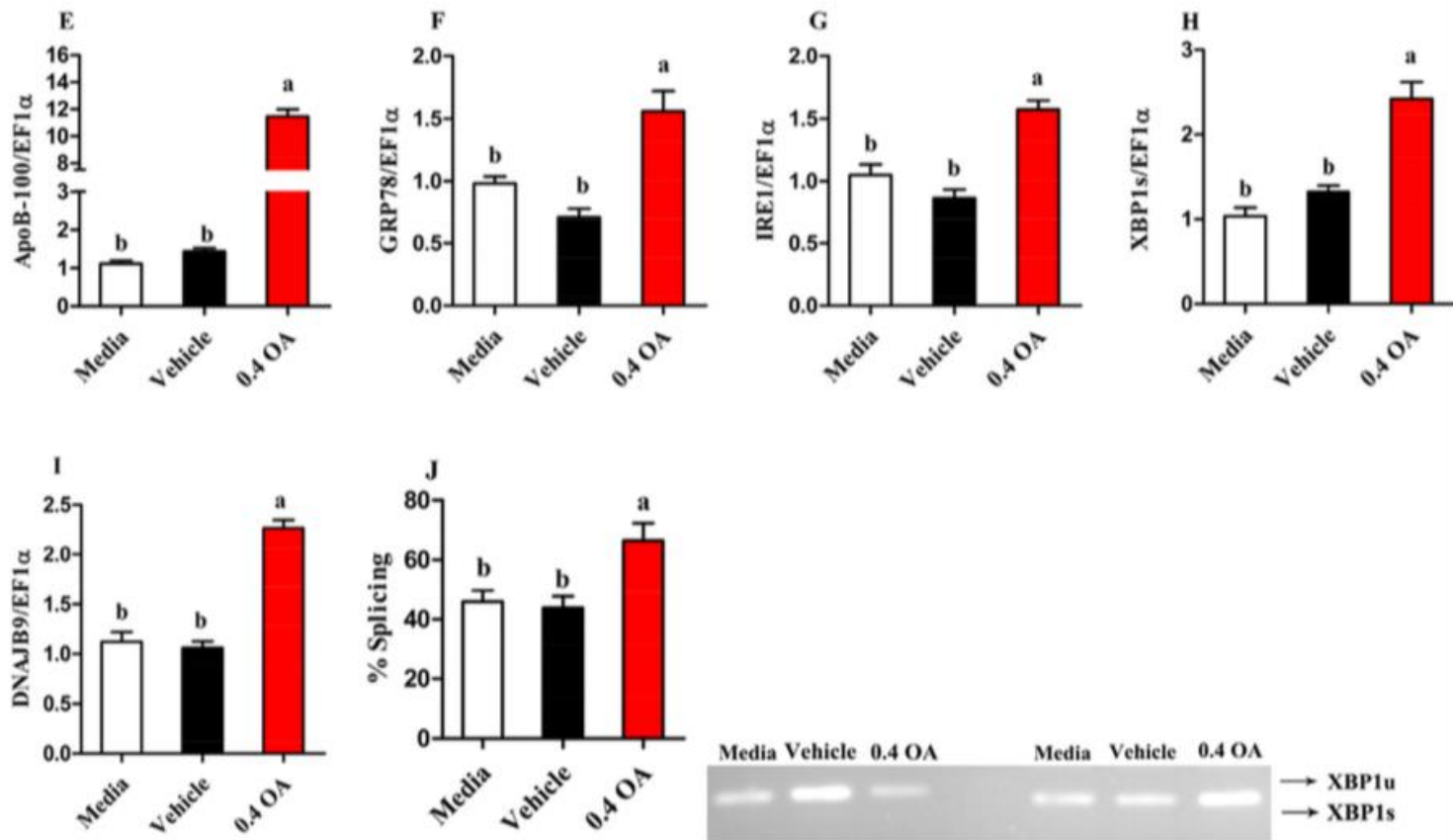
5. 肝脏脂质转运和内质网应激相关基因表达量



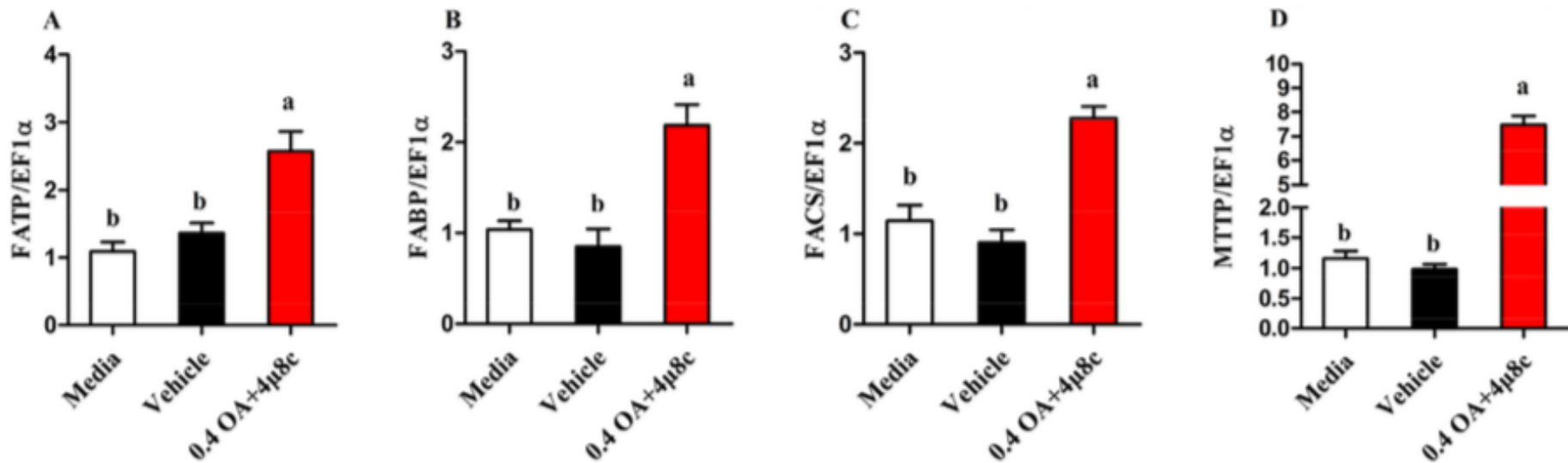
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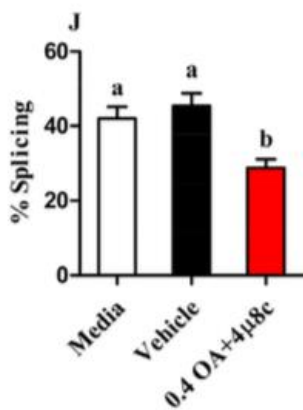
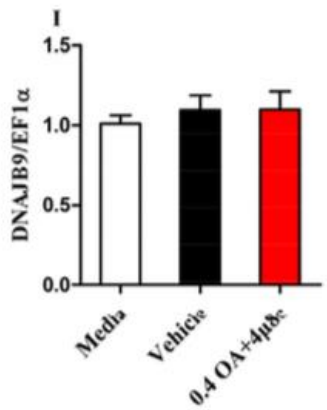
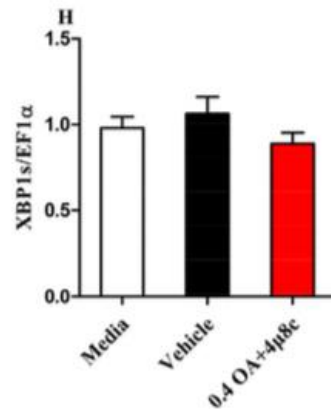
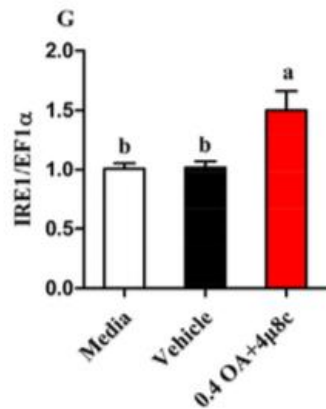
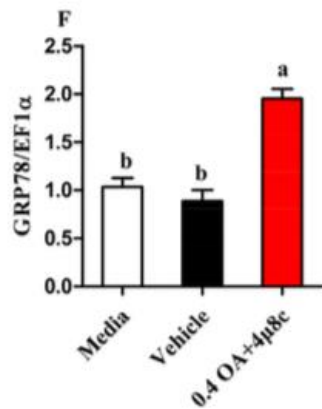
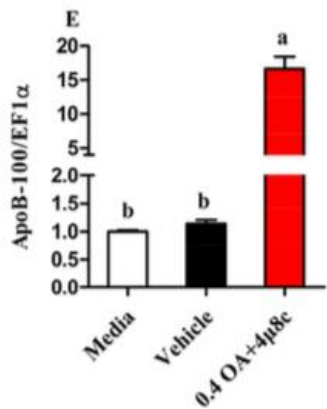
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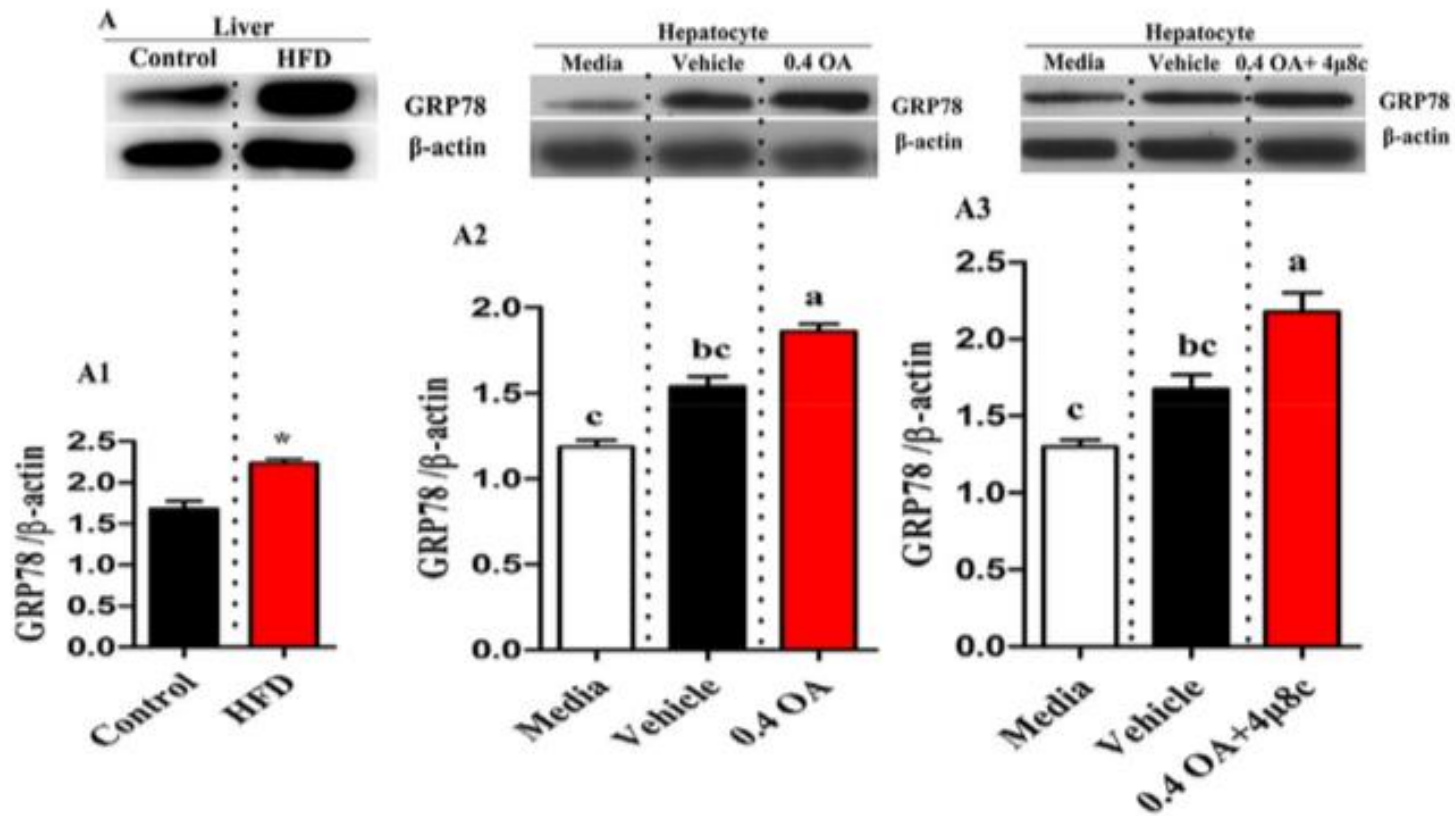
5. 肝脏脂质转运和内质网应激相关基因表达量



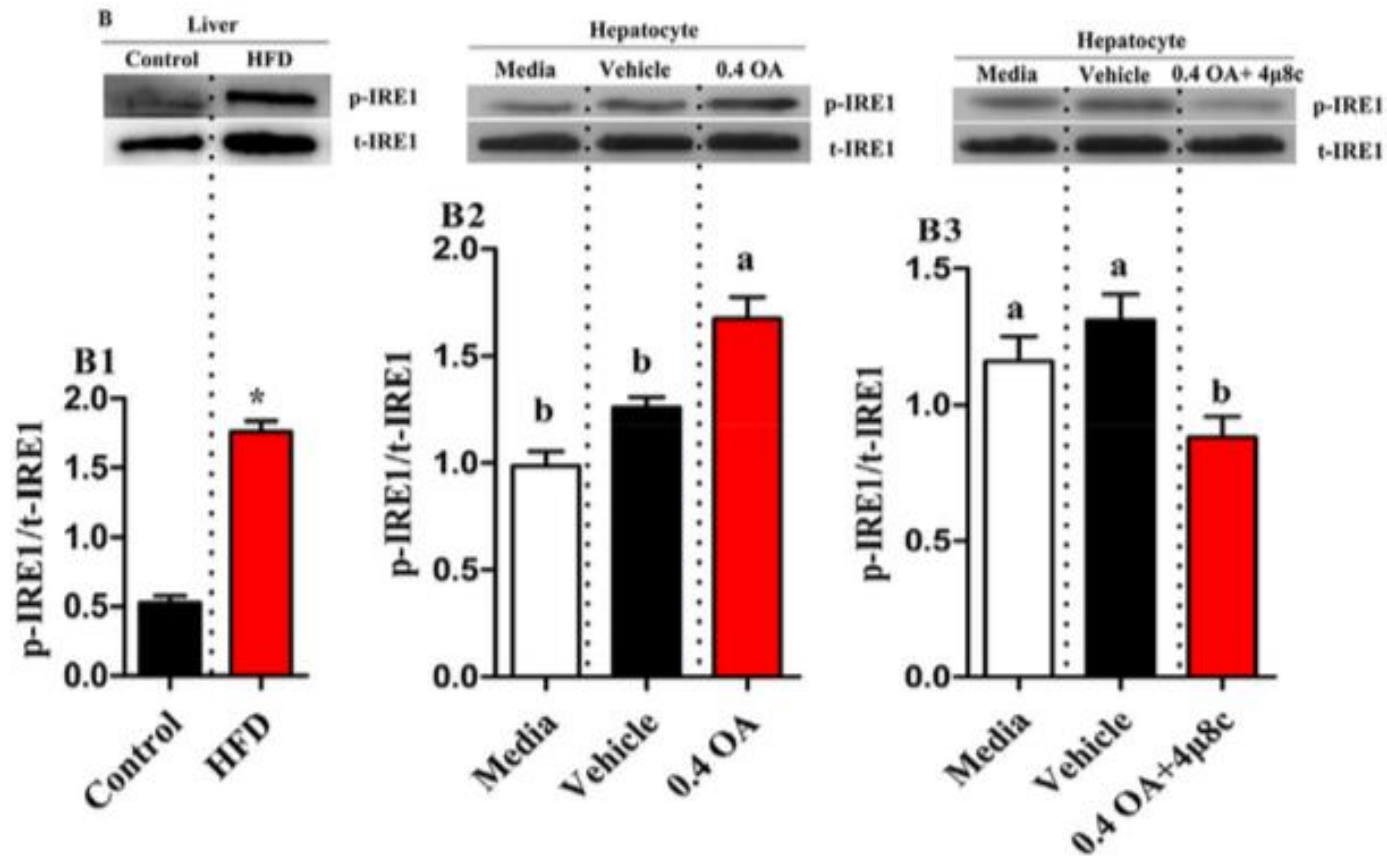
5. 肝脏脂质转运和内质网应激相关基因表达量



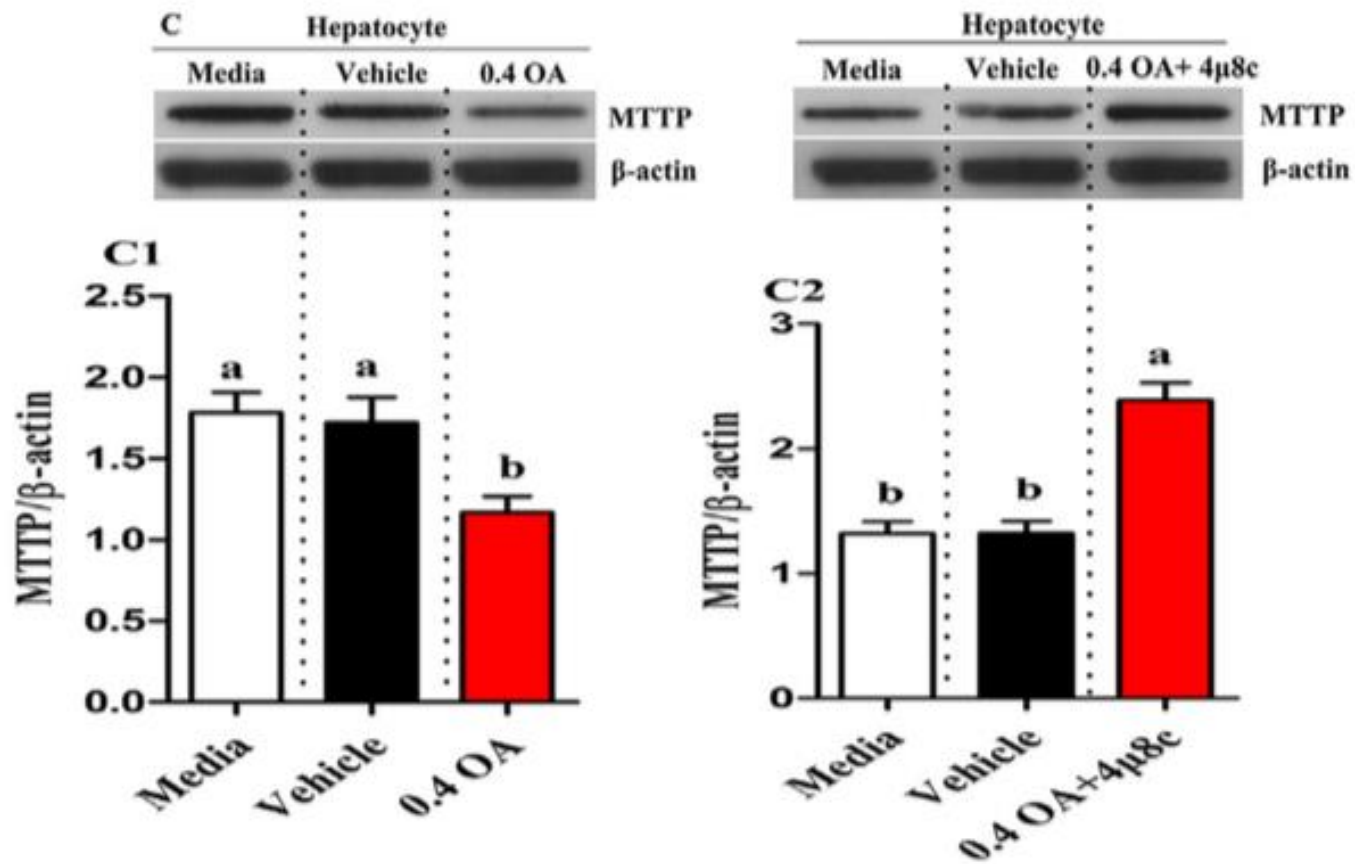
6.内质网应激相关蛋白表达量



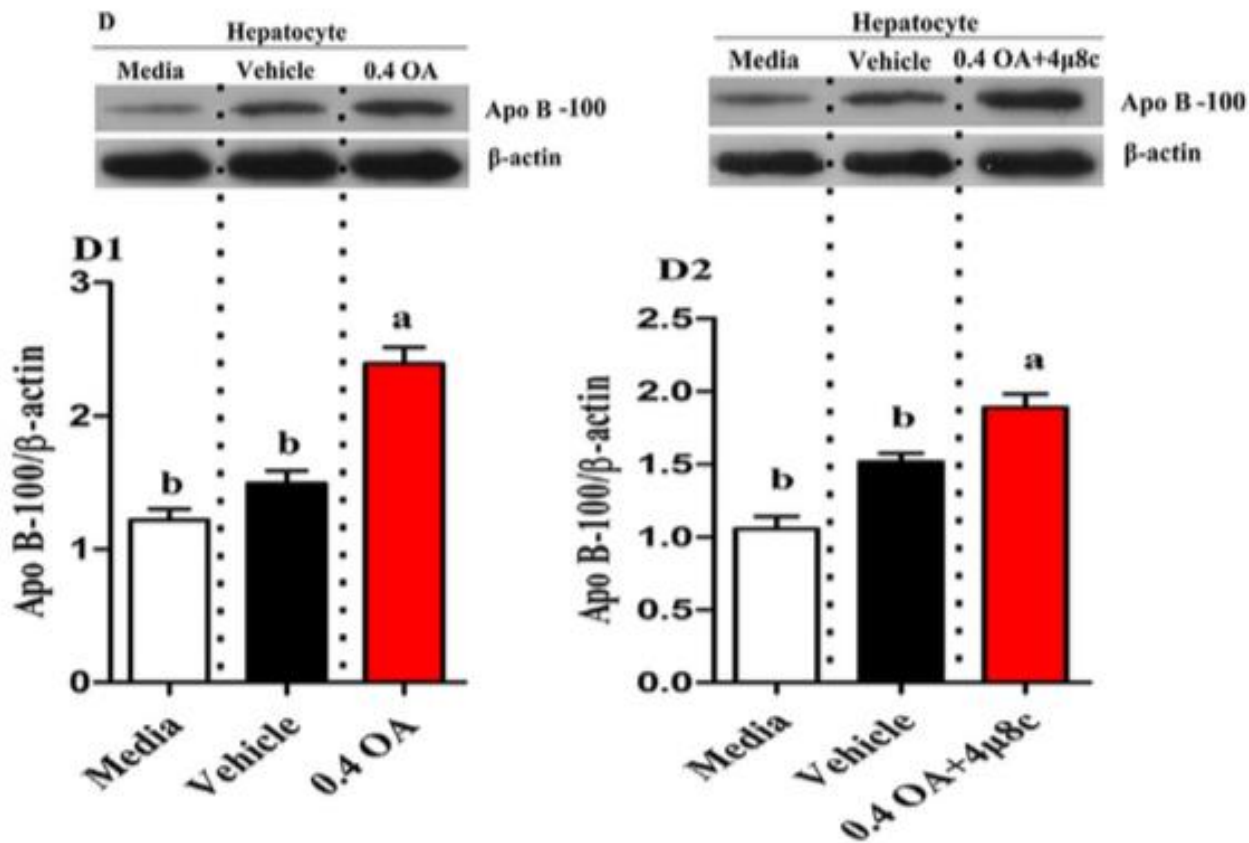
6.内质网应激相关蛋白表达量



6.脂质转运相关蛋白表达量



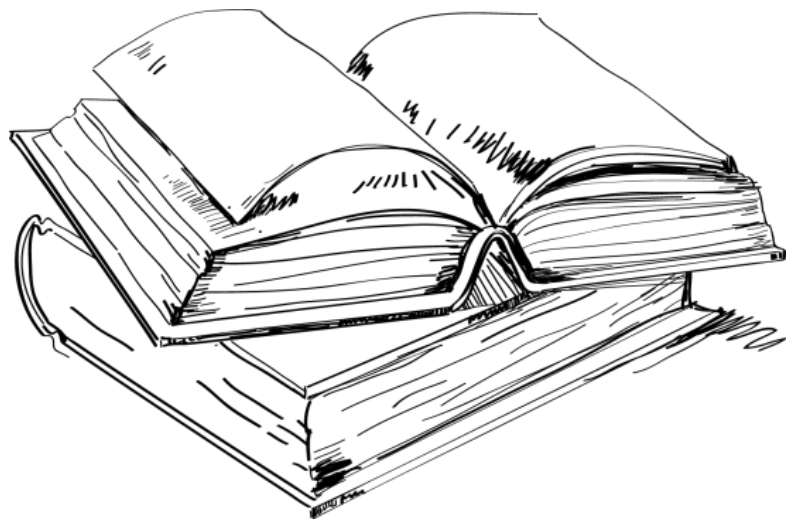
6.脂质转运相关蛋白表达量





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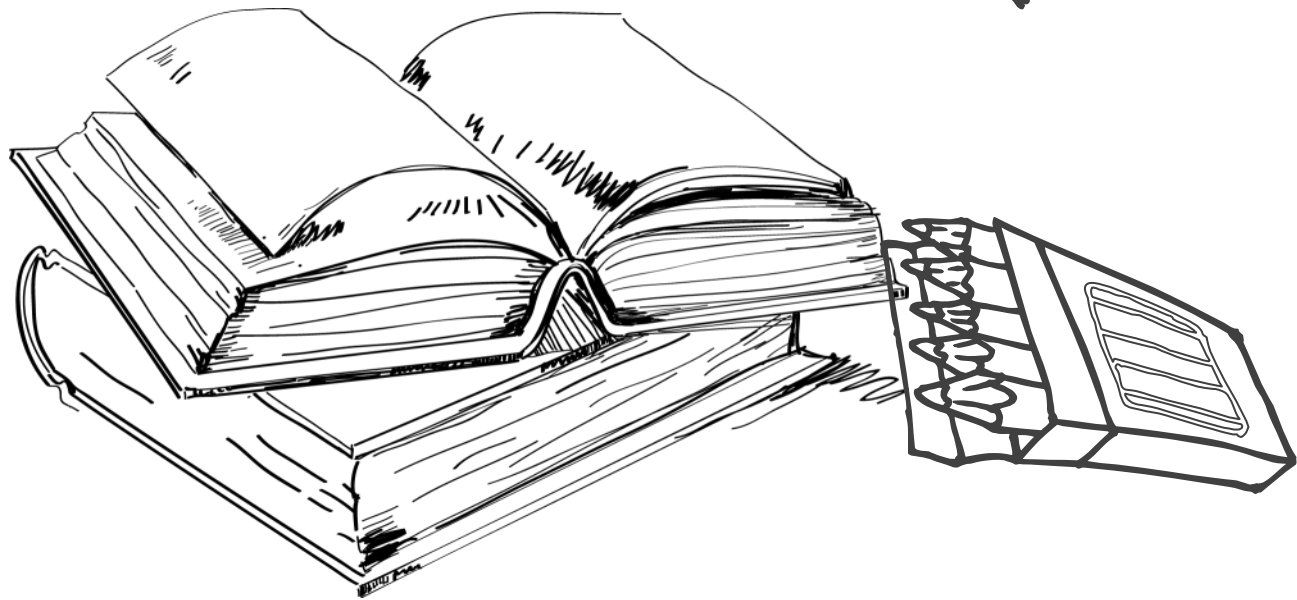


④ 结论与分析

四. 结论与分析



长期高脂喂养可能通过激活团头鲂肝脏中内质网应激相关的IRE1 / XBP1信号通路而导致脂质分泌异常。



敬请各位老师同学批评指正！