Results: The NAFLD cellular model shows significant lipid accumulation and lipid peroxidation compared to control hepatocytes. Both DCA and UDCA significantly decreased lipid accumulation without altering cell viability. Besides, DCA showed a greater ability in decreasing lipid peroxidation level.
Conclusions: Our findings demonstrate that both BAs improved lipid dysmetabolism and oxidative stress condition in the steatotic hepatocytes. UDCA seems to have the best protective and beneficial potential as it is able to both alleviate lipid accumulation in the steatotic liver cells, but also play antioxidant effect.

55ASM-0061 ST | Ablation of Aquaporin-9 ameliorates the systemic inflammation of LPS-induced endotoxic shock in mouse

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Background: Septic shock is the most severe complication of sepsis, characterized by a systemic inflammatory response following bacterial infection, leading to multiple organ failure and dramatically high mortality (42% at 28 days after diagnosis). Aquaporin-9 (AQP9), a membrane channel protein expressed mainly in hepatocytes and leukocytes, has been recently associated with inflammatory and infectious responses, thus triggering strong interest in AQP9 as a potential target for reducing septic shock-dependent mortality. Following up on previous *in vitro* work demonstrating AQP9 involvement in LPS-induced maturation of murine bone marrow dendritic cells and proinflammatory cytokines release, here we evaluated whether AQP9 contributes to murine systemic inflammation during endotoxic shock.
Materials and Methods: Wild type (*Aqp9*$^{+/+}$; WT) and *Aqp9* gene knockout (*Aqp9*$^{-/-}$; KO) male mice aged 9-12 weeks were submitted to endotoxic shock by i.*p*. injection of LPS (40 mg/kg) and the related survival times were followed during 72 hours. Electronic paramagnetic resonance and confocal microscopy were employed to analyse the nitric oxide (NO) and superoxide anion (O_2^-) production, and the expression of inducible NO-synthase (iNOS) and cyclooxygenase-2 (COX-2), respectively, in the liver, kidneys, aorta, heart and lungs of the mouse specimens.
Results: LPS-treated KO mice survived significantly longer than corresponding WT mice, and 25% of the KO mice fully recovered from the endotoxin treatment. The LPS-injected KO mice showed lower inflammatory NO and O_2^- productions and reduced iNOS and COX-2 levels through impaired NF-κB p65 expression/activation in liver, kidney, aorta and heart compared to the LPS-treated WT mice. Consistent with these results, treatment of a rodent hepatoma cell line (FaO) with the AQP9 blocker HTS13268 prevented the LPS-induced increase of inflammatory NO and O_2^-.
Conclusions: Overall, these findings suggest a role for AQP9 in the early acute phase of LPS-induced endotoxic shock involving the NF-κB signaling pathway. Modulation of AQP9 expression/activity may reveal useful in developing novel endotoxemia therapeutics.

55ASM-0109 ST | Effects of physical exercise in biochemical parameters and dorsolateral prostate lesions: Data from a rat model of prostate cancer

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Background: Prostate cancer (PCa) is among the most prevalent cancers worldwide. Physical exercise is widely recognized due to its beneficial effects. This study aimed to evaluate the effects of physical exercise on biochemical parameters and in dorsolateral prostate lesions in a rat model of PCa.
Materials and Methods: Ninety-five male Wistar Unilever rats were randomly divided into eight groups sacrificed at 35 (groups I) or 61 weeks of age (groups II): control sedentary groups (Cont+Sed I ($n = 10$); Cont+Sed II ($n = 10$)); induced sedentary group (PCa+Sed I ($n = 10$); PCa+Sed II ($n = 15$)); control exercised groups (Cont+EX I ($n = 10$); Cont+EX II

($n = 10$)) and induced exercised groups (PCa+EX I ($n = 10$); PCa+EX II ($n = 20$)). All procedures were approved (*DGAV*, no. 021326). Animals from exercised groups started the exercise program in a treadmill at 8 weeks of age, for 28 weeks or 53 weeks. The animals were trained 5 days/week, 60 min per day. Prostate lesions were induced at 12 weeks of age, with sequential administration of flutamide, testosterone propionate and *N*-methyl-*N*-nitrosourea, and subcutaneous implants of crystalline testosterone. Animals were sacrificed at 35 or 61 weeks of age. Peripheral blood of all animals was collected by intracardiac puncture. A complete necropsy was performed. The dorsolateral prostate tissues sections were processed for histological analysis. Data were analysed using SPSS 25. $p < 0.05$ were considered statistically significant.

Results: Serum levels of albumin and cholesterol were higher in group PCa+Sed I when compared with group PCa+Sed II ($p < 0.05$). Testosterone levels were higher in exercised groups when compared with sedentary ones, in both control and PCa groups I and II ($p < 0.05$). No differences were observed in the remaining parameters ($p > 0.05$). Dorsolateral prostate lesions were classified as dysplasia, prostatic intraepithelial neoplasia (PIN) and microinvasive carcinoma. The number of prostate lesions was higher in animals from groups II than in those from groups I, mainly in PCa+Sed II animals when compared with PCa+Sed I ($p < 0.05$). Conversely, the PIN frequency was higher in group PCa+EX II than in group PCa+Ex I ($p < 0.05$). Although the differences were not statistically significant, the animals from group PCa+Ex II showed a slight decrease in the frequency of lesions than the PCa+Sed II group ($p > 0.05$).

Conclusions: Overall, the animals sacrificed at 61 weeks of age developed more dorsolateral prostate lesions than animals sacrificed at 35 weeks of age, which may be related to a longer testosterone exposure.

55ASM-0213 ST | Increased contribution of fructose to de novo synthesis of saturated over mono-unsaturated fatty acids in mice fed high-sugar and high fat-high sugar diets

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Background: Fructose is considered to promote non-alcoholic fatty liver disease (NAFLD) through its conversion to fatty acids in the liver and mouse models are widely used to study the lipogenic actions of fructose. Saturated fatty acids (SFA) are considered to be more lipotoxic than monounsaturated fatty acids (MUFA) such as oleate and palmitoleate. Previously, we showed that for healthy mice that received a single overnight supplement of high-fructose corn syrup-55 (HFCS-55), the fructose component contributed a higher proportion of acetyl-CoA to the synthesis of SFA compared to MUFA. In this study, we sought to determine whether this preference of fructose for SFA over MUFA synthesis was happening in mice that had previously been on a long-term high-sugar or a high fat + high sugar diet.

Materials and Methods: Twelve male C57/BL6 mice fed with standard chow supplemented by HFCS-55 at 30% w/v in the drinking water for 18 weeks (HS) and 10 mice fed a high-fat diet supplemented likewise by HFCS-55 (HFHS) were studied. During the final evening, the HFCS-55 fructose component was enriched with 20% [U-^{13}C] fructose and the mice were administered with deuterated water. The mice were allowed to feed naturally overnight and then sacrificed. Livers were freeze-clamped and triglycerides were isolated for ^{13}C and ^{2}H NMR spectroscopy. The contribution of the HFCS-55 fructose component to *de novo* synthesis of SFA, oleate, and palmitoleate was estimated from the ^{13}C- and ^{2}H-NMR enrichment data. Data are presented as means ± standard error.

Results: For HS mice, fructose contributed 28 ± 4% of acetyl-CoA to the synthesis of SFA compared to 16 ± 3% to oleate synthesis ($p = 0.054$ vs. SFA) and 18 ± 3% to palmitoleate synthesis ($p = 0.118$ vs. SFA). For HFHS mice, fructose contributed 18 ± 3% of acetyl-CoA to the synthesis of SFA compared to 7 ± 2% to oleate synthesis ($p = 0.002$ vs. SFA) and 7 ± 2% to palmitoleate synthesis ($p = 0.003$ vs. SFA).

Conclusions: For mice fed high-fat diets that were supplemented with HFCS-55, fructose contributed significantly more acetyl-CoA to SFA synthesis than to either oleate or palmitoleate synthesis thereby promoting a more lipotoxic lipid profile. For mice fed a normal chow diet supplemented with HFCS-55, there was only a tendency for higher contributions of fructose to SFA synthesis in comparison to oleate or palmitoleate.