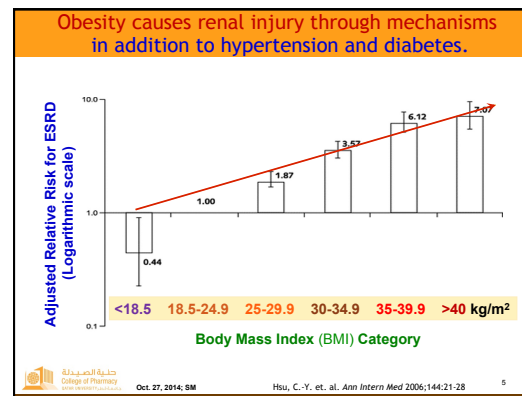
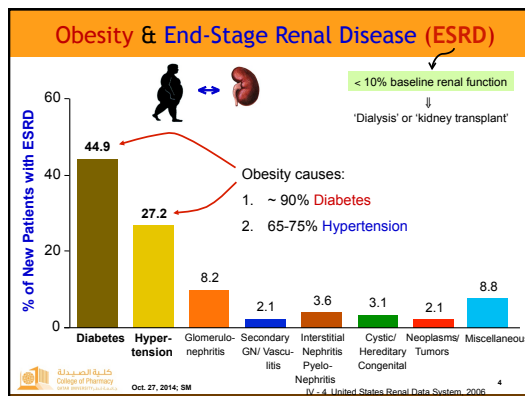
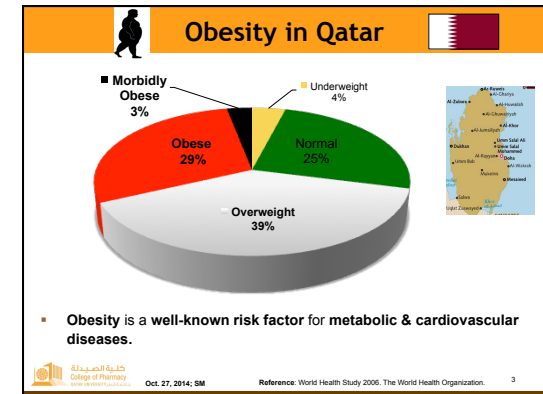
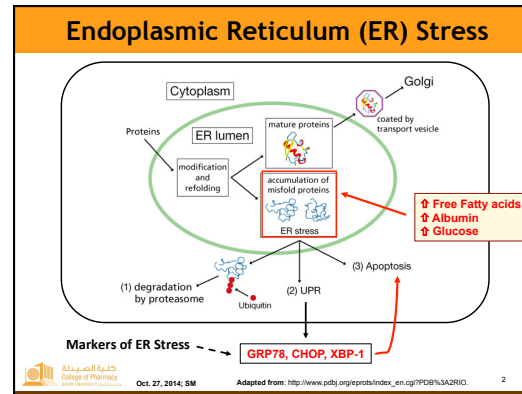

Renoprotective Role of 4-Phenylbutyrate Against Fatty acid-Induced Endoplasmic Reticulum Stress And Cell Death

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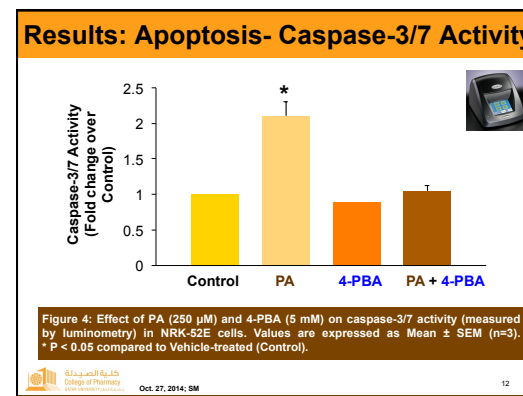
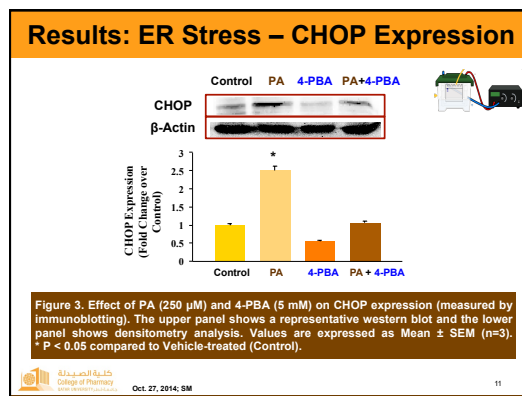
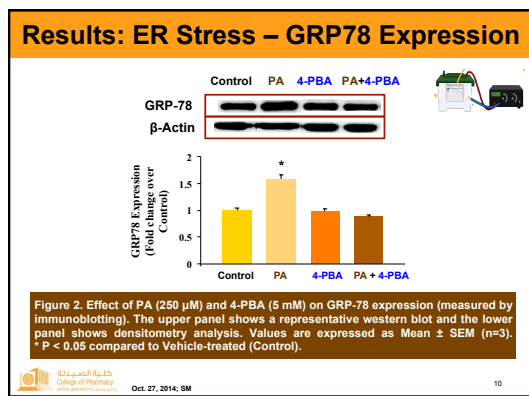
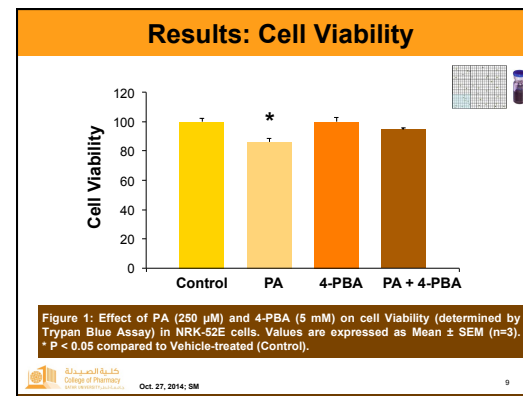
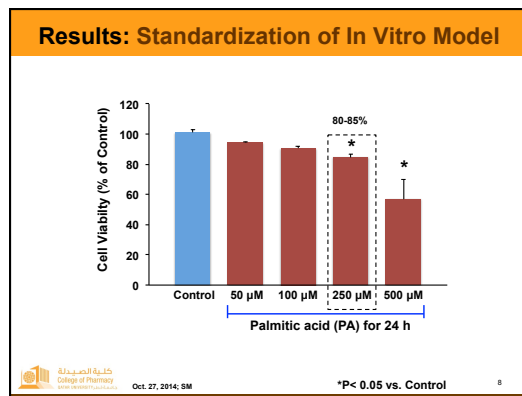
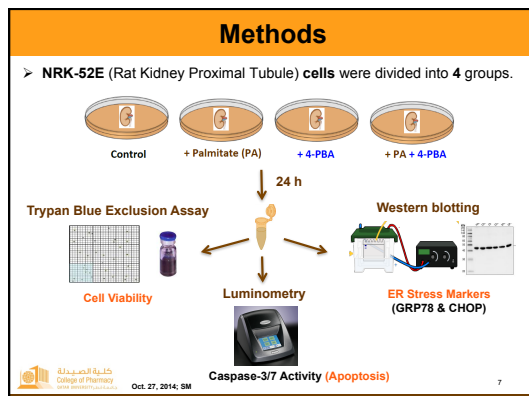
Obesity, ER Stress and CKD

- Obesity is a significant risk factor for chronic kidney disease (CKD)¹.
- Increased free fatty acid levels (FFA) during obesity impairs ER machinery ⇒ ER stress ⇒ Renal Injury²
- 4-phenylbutyrate (4-PBA) – a “chemical chaperone” – has been shown to protect the liver³ and pancreas⁴ against obesity-induced organ damage.
- However, the protective role of 4-PBA in obesity-induced renal damage is unknown.

Objective: To test whether 4-PBA offers protection against FFA induced ER stress and cellular injury in renal cells.

1. Wang, et al. Kidney Int. 2007;73(1):19-33
 2. Inagi R. Nephron Exp Nephrol. 2009;112(1):e1-9.
 3. Ozcan, et al. Science. 2006;313(5790):1137-40.
 4. Choi, et al. Arch Biochem Biophys. 2006;475(2):109-14.

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Summary and Conclusions

- Exposure of NRK-52E cells to **PA** resulted in –
 - ❖ Significant decrease in cell viability (**Renal Cell Death**)
 - ❖ Induction of ER stress markers (↑ **GRP78** and **CHOP**)
 - ❖ Increased caspase-3/7 activity (**Apoptosis**)
- 4-PBA treatment protected cells from PA-induced ER stress and (apoptotic) cell death.
- **4-PBA** acts as "**nephroprotectant**" and **prevents fatty acid-induced ER stress and apoptosis in renal cells**.
- Further studies *in vivo* are required to validate the therapeutic potential of 4-PBA to prevent the development of CKD during obesity.



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