Bitter melon (*Momordica charantia*) extracts can influence cultured adipocytes cells and prevent lipid accumulation

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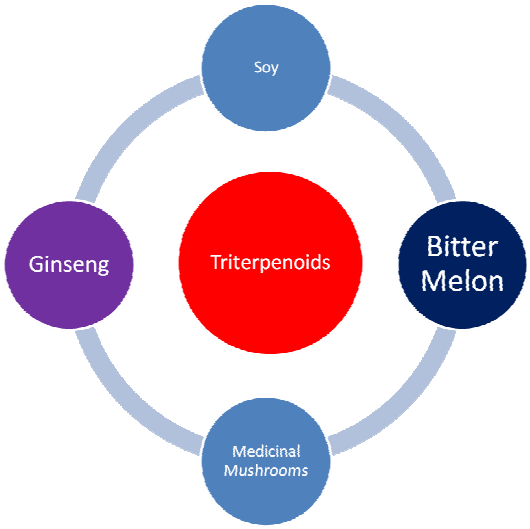
Interest



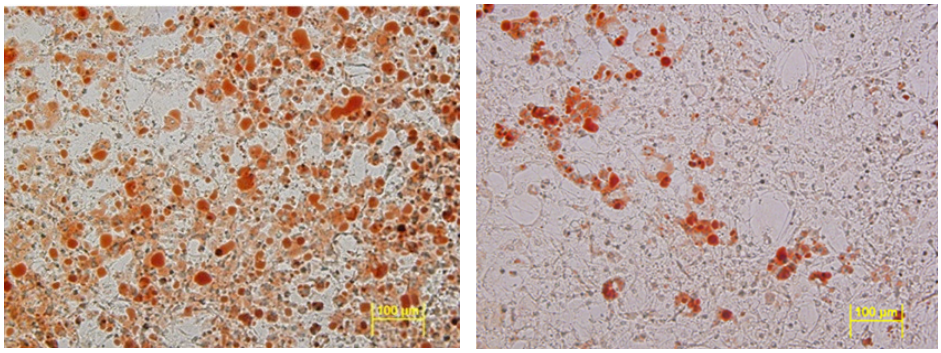
Question

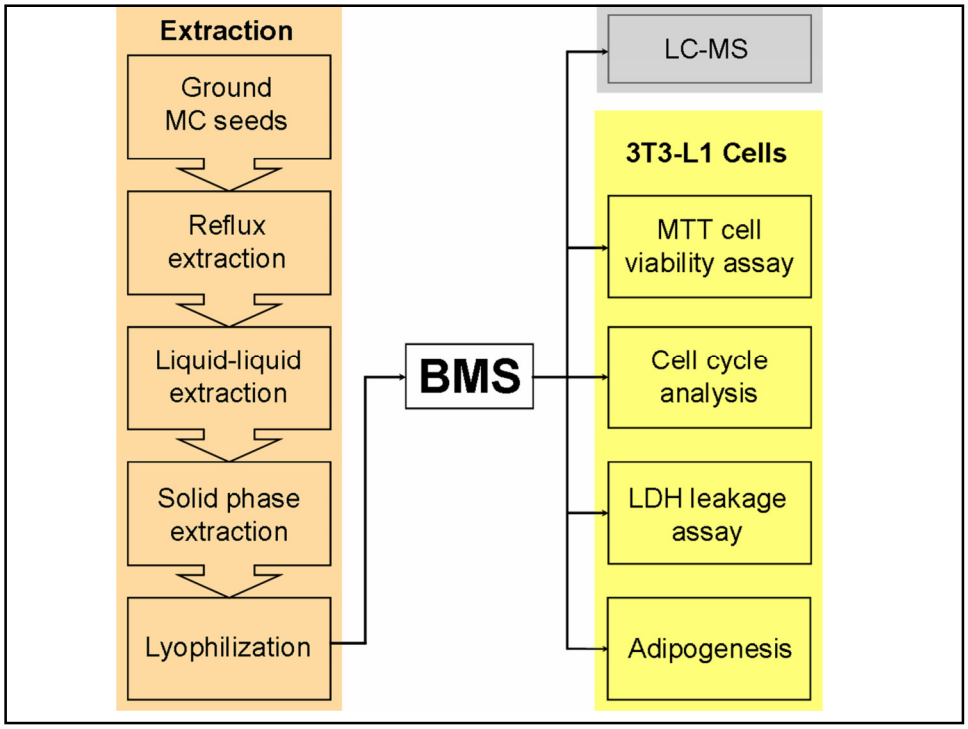
- Can a bitter melon extract prepared from both the seed and flesh influence cultured adipocyte function?
- If so does it have any implications for biological response?

Why Adipocytes?

- Increased number of adipocytes (hyperplasia)
- Enlarged size of adipocytes (hypertrophy)
- Excess lipids deposited insulin-sensitive tissues
- Physiological dysfunction liver and pancreas
- Insulin Resistance, Impaired glucose tolerance

Cultured Adipocytes





Bitter Melon Evidence

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Bitter melon (*Momordica charantia*) triterpenoid extract reduces preadipocyte viability, lipid accumulation and adiponectin expression in 3T3-L1 cells

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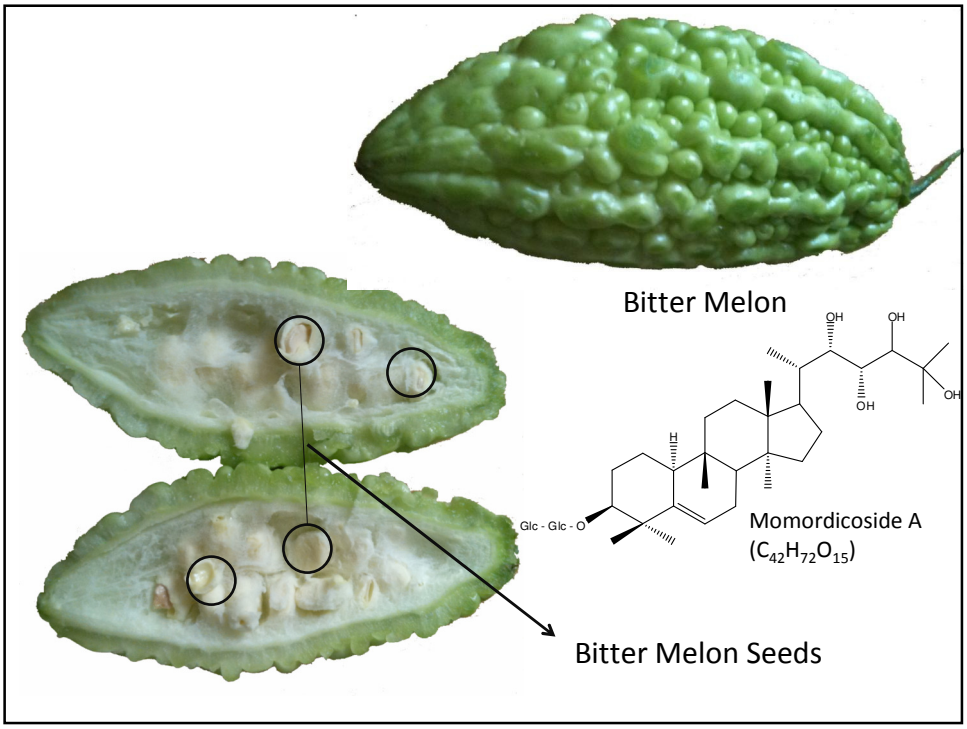
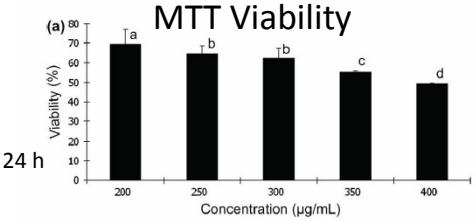
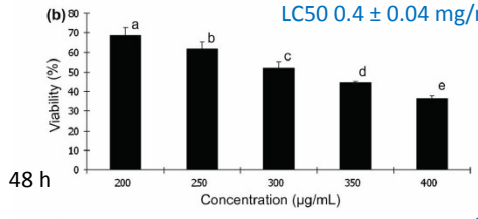


MTT Viability



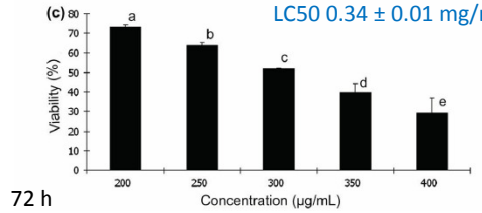
24 h

LC50 0.4 ± 0.04 mg/mL



48 h

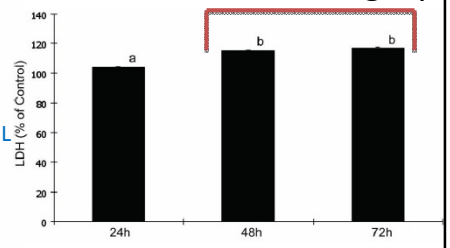
LC50 0.34 ± 0.01 mg/mL



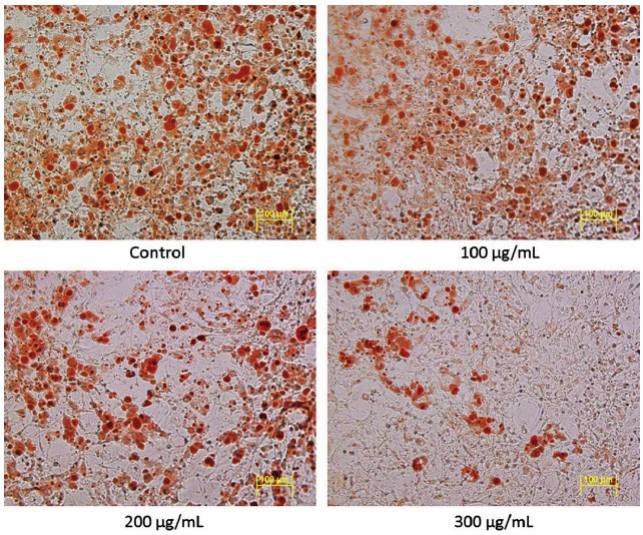
72 h

LC50 0.31 ± 0.01 mg/mL

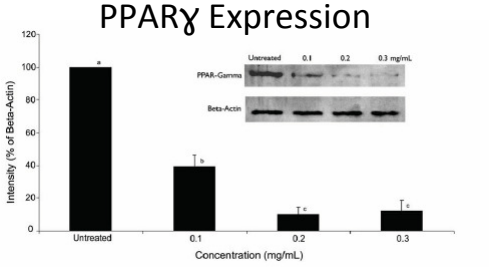
LDH Membrane Integrity



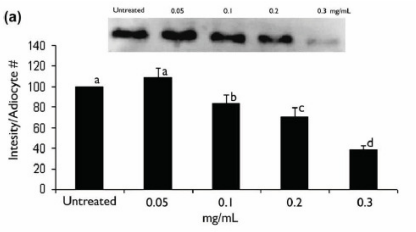
Lipid Accumulation



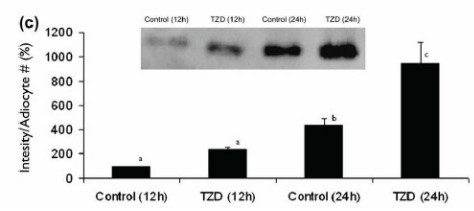
PPARɣ Expression



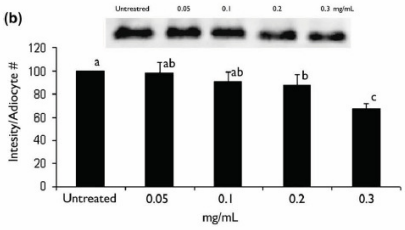
Adiponectin 12 h



TZD Adiponectin Positive Control

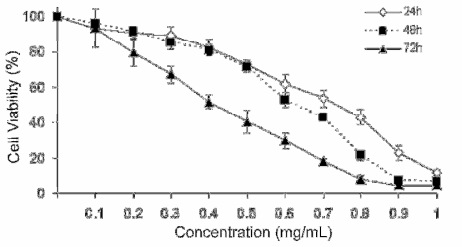


Adiponectin 24 h

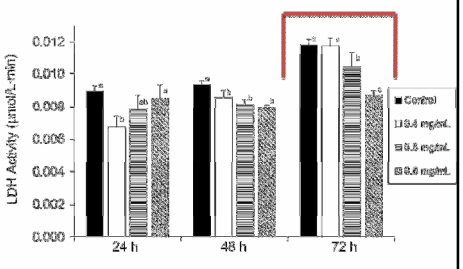


Bitter Melon Seed

MTT Viability

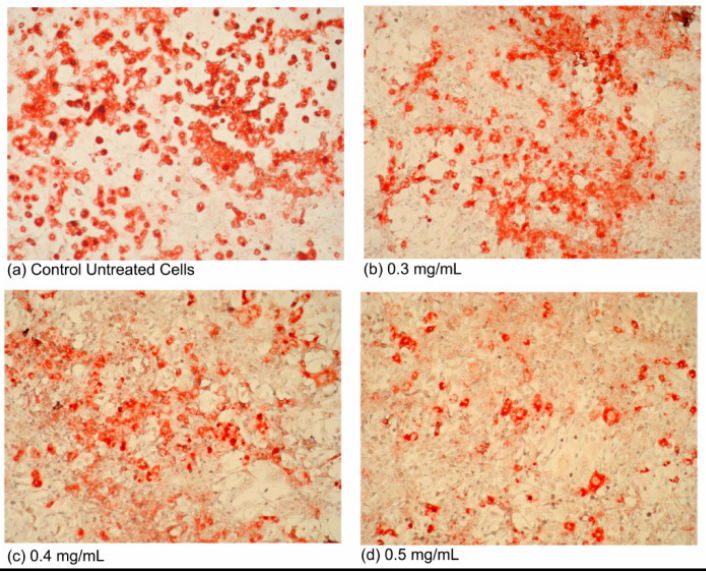


LDH Membrane Integrity



24 h LC50 0.78 ± 0.01 mg/mL
48 h LC50 0.69 ± 0.01 mg/mL
72 h LC50 0.56 ± 0.02 mg/mL

Lipid Accumulation



Comparison

Bitter Melon

- LC50 0.31 ± 0.01 mg/mL
- ⬇ cell growth
- ⬇lipid acquisition
- ⬇adiponectin expression
- Limited change on cell cycle
- ⬆ LDH release

Bitter Seed

- LC50 0.56 ± 0.02 mg/mL
- ⬇ cell growth
- ⬇lipid acquisition
- ⬇adiponectin expression
- Limited change on cell cycle
- ⬇ LDH release

Triterpenoid compositional difference?

Triterpenoids

Bitter Melon

Positive ID

- momordicilin
- momordicoside A
- goyaglycoside E
- goyaglycoside g
- momordicoside E

Probable ID

- goyaglycoside a, b, c, d, momordicoside F2/I, K

Bitter Melon Seed

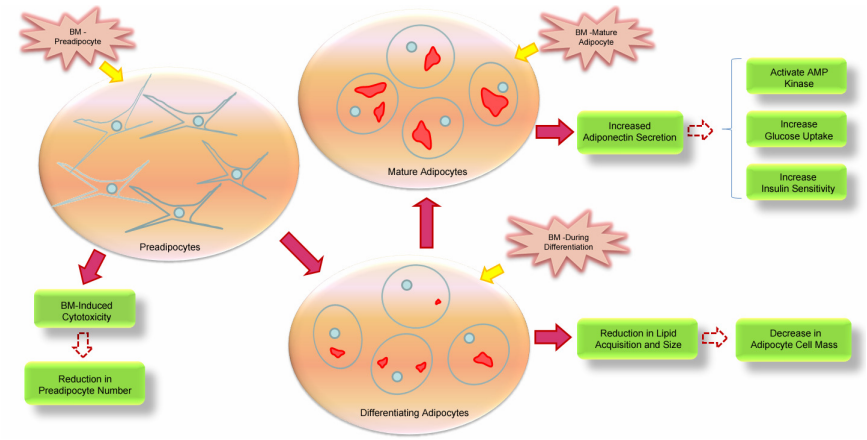
Positive ID

- momordicoside A
- momordicoside D
- goyaglycoside h

Probable ID

- Goyaglycoside E/goyaglycoside f, momordicoside F2/I

cucurbitane and oleanane-type triterpenoids



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