

NEW PHYTOCHEMICAL BASED COCKTAIL FOR IN VITRO ADIPOCYTES DIFFERENTIATION

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Research objective:

To replace expensive compound for adipocytes differentiation with phytochemicals

ADIPOCYTES

Play a major role in energy homeostasis in the organism
 Function is to synthesize and store triglycerides at times of caloric excess and to mobilize these stores when Caloric intake is low
 Widely used for *in vitro* endocrinology study (3T3-L1)

Mechanism of ADIPOCYTES DIFFERENTIATION

In vivo: Transformed from preadipocytes

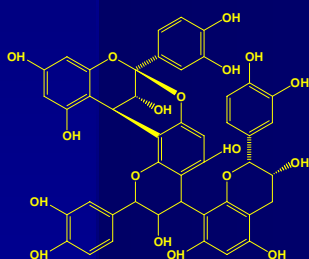
In vitro: differentiation cocktail containing

1-methyl-3-isobutyl xanthine (a synthetic glucocorticoid, activates the glucocorticoid receptor pathway).

b) IBMX, Dexamethasone (cAMP phosphodiesterase inhibitor, increase intracellular cAMP)

c) Insulin (is known to act through the insulin like growth factor 1 (IGF-1) receptor)

Recent study (TaHER, 2004) Cinnamtannin B1 (CB1) Mimic Insulin by facilitate cells glucose uptake.

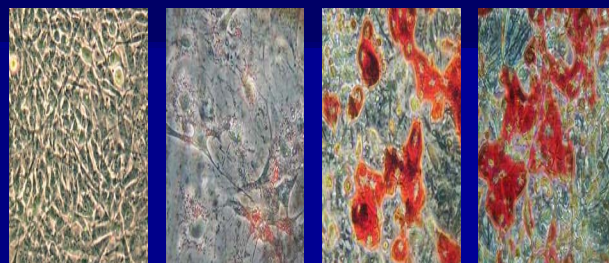


Cinnamtannin B1
 (TaHER, 2004, Nonaka, 1982)

Research Methodology

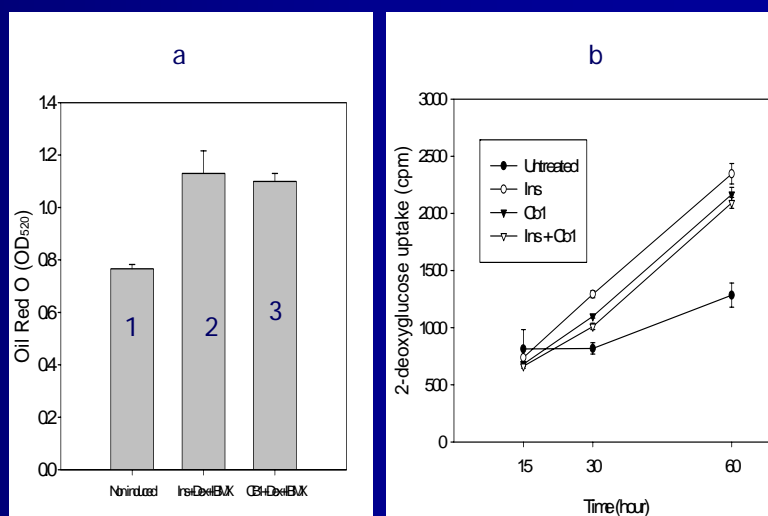
Day	Sample 1 (Negative control)	Sample 2 (Positive control)	Sample 3 (Treated sample)
0	No inducer	Dex. 0.25 mM IBMX 0.5 mM Insulin 1 mg /mL	Dex. 0.25 mM IBMX 0.5 mM Cinnamtannin B1 100 mg/mL
2	No inducer	Insulin 1 mg /mL	Cinnamtannin B1 100 mg/mL

Lipid Droplets Formation in Differentiated Adipocytes



A= the confluent of undifferentiated preadipocytes, **sample 1** (negative control, non-induced preadipocytes), **sample 2** (positive control, containing (insulin + Dex + IBMX), **sample 3** (treated sample, containing (CB1+ Dex+ IBMX). Red areas show lipid droplets

Lipid Droplets accumulation (a) and glucose uptake (b) in tested cells



CONCLUSION

Cinnamtannin B1 could be used to replace insulin for adipocytes differentiation

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