Table. Corn Oil: Effect on Blood Lipids, Animal Studies

Author/ Year	De-sign Type	Class	Quality (+,-,Ø)	Purpose/ Population Sample Size	Regimen	Primary Outcome Measures Results	Author's Conclusions/ *Reviewer's Comments (Italicized)*
Ramjiganesh et al., 2002	**RCT**	**A**	**+**	**Purpose:** To determine whether hepatic LDL receptors up-regulated by corn fiber oil **Sample:** 50 male Hartley guinea pigs **Inclusions:** Male Hartley guinea pigs; wt 300-400 g **Exclusions:** None listed	**Run-in Period:** None **TX/Duration:** Guinea pigs randomly assigned to following groups and TX for 4 wk: 1) Diet 1 (CNTL): 0 g/100 g corn fiber oil, 15 g/100 corn oil, 0.25 g/100 g chol 2) Diet 2: 5% corn fiber oil, 10 g/100 g corn oil, 0.25 g/100 g chol 3) Diet 3: 10% corn fiber oil, 5 g/100 g corn oil, 0.25 g/100 g chol 4) Diet 4: 15% corn fiber oil, 0 g corn oil, 0.25 g/100 g chol 5) Diet 5: 15 g/100 g corn oil, 0 g corn fiber oil, 0.04 g/100 g chol **Dose/Form:** 1) Diet 1 (N=10): 15 g/100 g regular corn oil 2) Diet 2 (N=10): 5 g/100 g corn fiber oil, 10 g/100 g regular corn oil 3) Diet 3 (N=10): 10 g/100 g corn fiber oil, 5 g/100	**Outcome Measures:** TC, LDL Hepatic chol Microsomal chol LDL receptor Chol 7 α–hydroxylase activity **Results:** % change in TC with each diet compared to CNTL diet: Diet 2 (corn fiber oil/corn oil): -30 (P<0.0005) Diet 3 (corn fiber oil/corn oil): -49 (P<0.0005) Diet 4 (corn fiber oil): -53 (P<0.0005) TC NS diff in corn fiber oil than in low chol Diet 5 (corn oil) % change in LDL with each diet compared to CNTL diet: Diet 2 (corn fiber oil/corn oil): -32 (P<0.0005) Diet 3 (corn fiber oil/corn oil): -55 (P<0.0005) Diet 4 (corn fiber oil): -57 (P<0.0005) LDL NS diff in corn fiber oil than in low chol Diet 5 (corn oil) % change in hepatic TC compared to CNTL diet: Diet 2,3,4 (corn fiber oil): -	**Author's Conclusions:** "In summary, CFO intake depleted the hepatic and microsomal cholesterol pools, which led to the induction of hepatic LDLR as evidenced by the observed increase in LDLR mRNA abundance. This up-regulation of the hepatic LDLR resulted in an enhanced clearance of LDL particles, thus contributing to the observed lowering of plasma LDL cholesterol" ***Reviewer's Comments:*** *Chol in low chol Diet 5 group dose equivalent to 300 mg/d in humans; NS diff in body wt gain or food intake among diff groups; all diets identical except for*

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					g regular corn oil 4) Diet 4 (N=10): 15 g/100 g corn fiber oil 5) Diet 5 (N=10): 15 g/100 g regular corn oil Detailed composition of corn fiber oil not reported **Dietary Intake During Study:** Total fat (% TE): not reported SFA (% TE): not reported Chol reported as g/4180 kJ: Diet 1: 0.64 Diet 2: 0.66 Diet 3: 0.67 Diet 4: 0.69 Diet 5: 0.10 Calories: Diet 1: 3.87 kcal/g Diet 2: 3.80 kcal/g Diet 3: 3.73 kcal/g Diet 4: 3.66 kcal/g Diet 5: 3.87 kcal/g **Dietary Intake Assessment/Frequency:** Free access to food and water; no other dietary intake assessment reported; wt of food	32-43 (*P*<0.001) Diet 5 (corn oil): -72 (*P*<0.01) % change in microsomal chol conc compared to CNTL diet Diet 2,3 (corn fiber oil/corn oil), 4 (corn fiber oil): -27-32 (P<0.0001) Diet 5 (corn oil): -52 (*P*<0.0001) Diff in LDL receptor only in Diet 4 (corn fiber oil) 150% up-regulation (*P*<0.01). Diet 5 (corn oil) 2.5-fold incr in LDL receptor vs CNTL (*P*<0.001) % change in hepatic chol 7 α–hydroxylase activity compared to CNTL diet: Diet 3 (corn fiber oil/corn oil),4 (corn fiber oil): +88 (*P*<0.05)	*type of fat and amt of chol*

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					consumed not reported		
Day, 1960	**Non-ran-dom-ized trial**	**C**	**NA**	**Purpose:** To study effect of corn oil vs coconut oil in esterification and removal of chol by reticulo-endothelial cells **Sample:** Experiment 1: N=72 Experiment 2: N=32 Experiment 3: N=32 **Inclusions:** Male albino rats, approx 200 g **Exclusions:** None listed	**Run-in Period:** No **TX/Duration:** EXPERIMENT 1: 1) CNTL: chol emulsion 2) Corn oil/chol emulsion 3) Coconut oil/chol emulsion 10 d EXPERIMENT 2: Phase 1: 1) Corn oil/chol emulsion 2) Coconut oil/chol emulsion 24 h Phase 2: Remaining rats subsequently given: 1) Corn oil without chol 2) Coconut oil without chol 7 d EXPERIMENT 3: 1) Corn oil/chol emulsion 2) Coconut oil/chol emulsion	**Outcome Measures:** Free and ester chol in sternal lymph nodes **Results:** % change in free and ester chol not reported EXPERIMENT 1: Ester chol sig decr with coconut oil vs corn oil ($P<0.05$); at d 4 no diff bet chol ester present in corn and coconut oil groups, both groups had sig more chol ester present vs CNTL ($P<0.01$); by d 10 chol ester present in coconut oil group sig incr vs corn oil group ($P<0.05$) Chol injected with corn oil removed from nodes at same rate as chol injected with coconut oil EXPERIMENT 2: Chol ester formed within 24 h sig decr with coconut oil vs corn oil ($P<0.001$); after 10 d chol ester incr in coconut oil group (no *P* value reported) Removal rate of TC from nodes	**Author's Conclusions:** "The removal rate of cholesterol taken up by the reticulo-endothelial cells of the nodes was unaffected by the presence of either corn oil or coconut oil" ***Reviewer's Comments:*** *Total and % change not reported; stat methods not reported; details of diet not complete*

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					24 h **Dose/Form:** EXPERIMENT 1: 1) CNTL: 2 ml equal parts chol and albumin 2) Corn oil: 2 ml equal parts chol and corn oil 3) Coconut oil: 2 ml equal parts coconut oil and chol 24 h, 4 d, 10 d EXPERIMENT 2: Details of dose/form not reported for phase 1 Phase 2: 1) Corn oil: 1 ml without chol 2) Coconut oil: 1 ml without chol 2 d, 4 d, 7 d EXPERIMENT 3: Details of dose/form not reported **Dietary Intake During Study:** Total fat (% TE): not reported	NS diff for 2 groups over 10 d EXPERIMENT 3: Chol ester present sig less in coconut oil group than corn oil group (P<0.05 at 8 and 12 h); uptake NS diff bet groups Chol absorption peak occurred at approx 12 h for both groups	

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					SFA (% TE): not reported Chol (mg/d): not reported Calories: not reported **Dietary Intake Assessment/Frequency:** Assessment/compliance not reported		
Anonymous, 1958	**Non-ran-dom-ized trial**	**C**	**-**	**Purpose:** To test notion that slightly higher level of unsaturated FA in corn oil enough to influence serum chol levels **Sample:** 40 8-wk-old White Rock cockerels **Inclusions:** Not provided **Exclusions:** Not provided	**Run-in Period:** None **TX/Duration:** STUDIES 1 AND 2: Divided into 4 groups receiving diets composed of diff fats **Dose/Form:** STUDY 1: 1) TX 1: 10% corn oil 2) TX 2: 10% cottonseed oil 3) TX 3: 10% FA distilled from cottonseed oil 4) TX 4: 10% FA fractionated from cottonseed oil (so as to simulate proportions of palmitic, oleic and linoleic acids as they occur in corn oil) + 0.1% myristic acid	**Outcome Measures:** Chol Incidence of atherosclerosis **Results:** STUDY 1: Birds fed corn oil consistently lower serum chol level than those fed cottonseed oil or either of its FA distillates NS diff incidence in atherosclerosis detected STUDY 2: Whole-germ fed birds sig lower serum chol than all other groups Chol level of expressed oil-fed group sig lower than that of extracted oil-fed group at all but terminal bleedings Diff of borderline sig found	**Author's Conclusions:** "These experiments suggest that the degree of saturation is not the sole factor in determining the response to cholesterol feeding" ***Reviewer's Comments:*** *No P values provided*

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					STUDY 2: 1) TX 1: 17.8% whole corn germ (56% lipid) 2) TX 2: 10% crude oil 3) TX 3: Hexane-extracted corn oil 4) TX 4: 8% solvent-extracted whole corn germ + 9.8% cottonseed oil **Dietary Intake During Study:** Chol: 1% **Dietary Intake Assessment/Frequency:** Food intake measured daily **Study Visits/ Measurements:** Plasma analyzed at 2-wk intervals Aortas examined for gross atherosclerotic plaques at end of experiments	among all oil-fed groups for incidence of atherosclerosis, but group that received whole germ sig protected against early lesions	

APPENDIXH2CornOilAnimalTable