



The Justification of a Ag-Health Research Strategy in Canada

What is CCARM? Our Journey from Bench to Bedside to Better Living

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**Why do we need research on
the health/nutrition
association?**

**What research organizations
may help?**

Are there examples?





**Heart disease is by far the
leading cause of death today**



and



**it is the largest drain on our
health care system**





Over 90% of all heart disease can be predicted from 3 factors

Effect of potentially modifiable risk factors associated with myocardial infarction in 52 countries (the INTERHEART study): case-control study.

Lancet 2004 Sep 11-17;364(9438):937-52

Yusuf S et al and the INTERHEART investigators



- 
1. Stop smoking
 2. Nutrition
 3. Exercise

All are modifiable





If this is true, then we have the
capacity to alter the leading cause
of death today by $>90\%$





If we already have the knowledge on what can reduce the incidence of the primary cause of death and the largest cost to our health care sector (by 90%),

Then we have healthy living in the palm of our hand.

We only need the will to institute and support a plan of **preventive** medicine.





Nutrition is one of the most important weapons in our preventive medicine arsenal.

How is all of this relevant to the agriculture sector?





The demand for a crop is directly related to its health related benefits.





**If demand increases, price will increase.
If demand increases, consumption will
increase.**

**If demand, price and consumption
increases, crop size & value will
increase.**

Who benefits?

**The farmer and the entire ag industry
will reap immediate benefits
(farmgate to marketplace)**





**Still don't believe there is a direct
relationship between health and the
entire ag sector as a business?**

Ask egg farmers

**Better yet, ask coconut plantation
owners in the Caribbean**

Ask canola farmers





**I've led you down a pathway of logic
that AAFC understood and acted
upon. It is applicable to every
chronic disease.**

**It has resulted in a unique research
facility in Winnipeg:**

**The Canadian Centre for Agri-food
Research in Health and Medicine
(CCARM).**





CCARM melds health and crops in a way that is unique.





Why is CCARM unique?

1. It is found in a medical research setting
2. It goes from bench to bedside in one institution

Animal mechanistic research



Clinical research



Clinical trials





Why is CCARM unique?

3. CCARM has regulatory capacity for foods and trials

Trial approval from Health Canada
(essential for health claims)





Why is CCARM unique?

4. CCARM is a formal agreement (~\$32M) amongst AAFC, St Boniface Hospital and the University of Manitoba

All of this makes it unique in the world
Makes it national



**We have a unique
positioning of clinical
and basic sciences at St
Boniface Hospital that
allows us to do powerful
translational research.**

How about an example?





Can flaxseed modify cardiovascular disease?



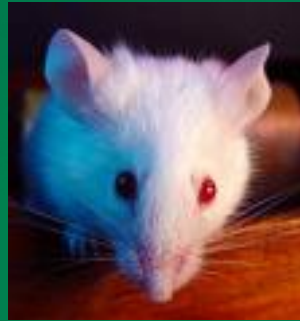
A large % of the flax grown in the world is grown in western Canada

Contains the essential omega-3 fatty acid - ALA





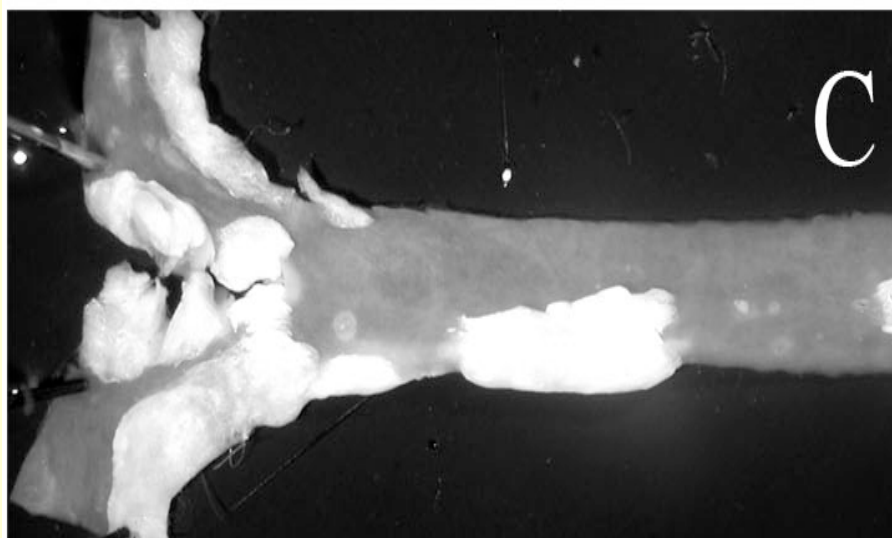
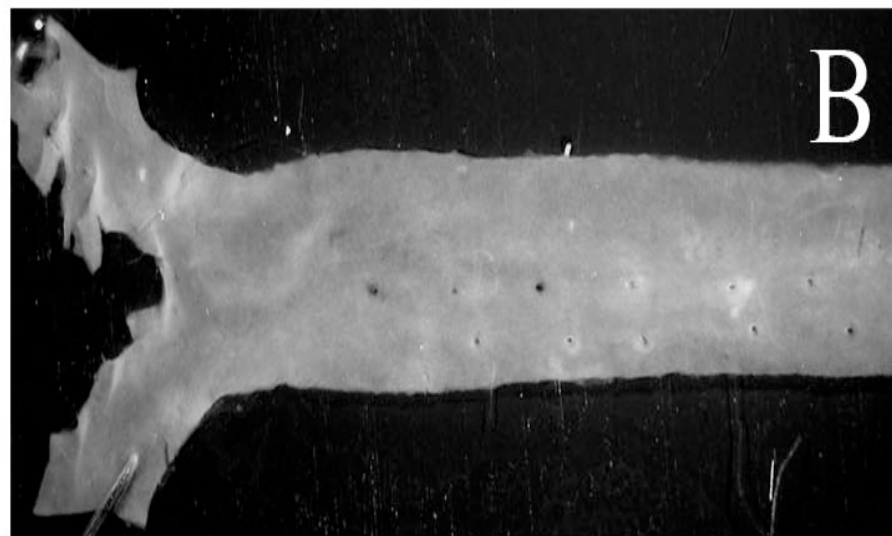
Does flaxseed provide an anti-atherogenic effect in the LDLr KO mouse?



We fed mice a 16 week diet composed of:

**Regular; 10% flax; cholesterol;
cholesterol +10% flax**





Conclusions

In animals, a flaxseed supplemented diet will strongly inhibit atherosclerosis, improves vascular relaxation, it is an anti-inflammatory and it inhibits arrhythmias.





BENCH TO BEDSIDE

**We need to apply this
bench information to
human populations. Does it
work in healthy individuals?
Does it provide benefits to
those with CVD?**





What is the best form of flaxseed to provide ALA and how quickly does it rise in the blood?

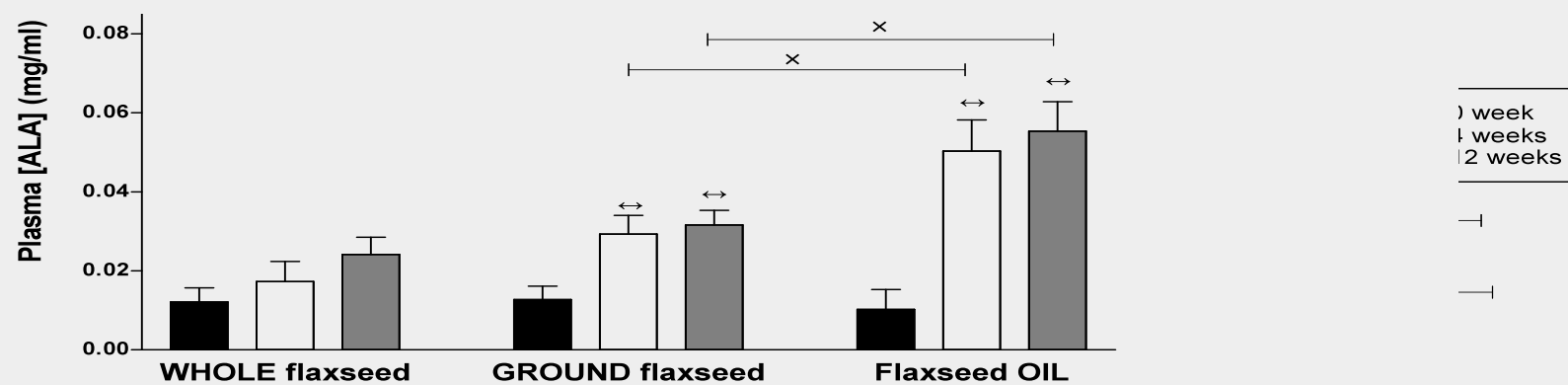
Does flaxseed induce side-effects? (g-i, bleeding times)

Will people eat flaxseed daily for up to 3 months?

This is all carried out in a healthy young population.



1a





CONCLUSIONS

**Ground flaxseed and flax oil deliver
ALA optimally.**

**We had to study difference in the
responses of young and elderly
subjects.**





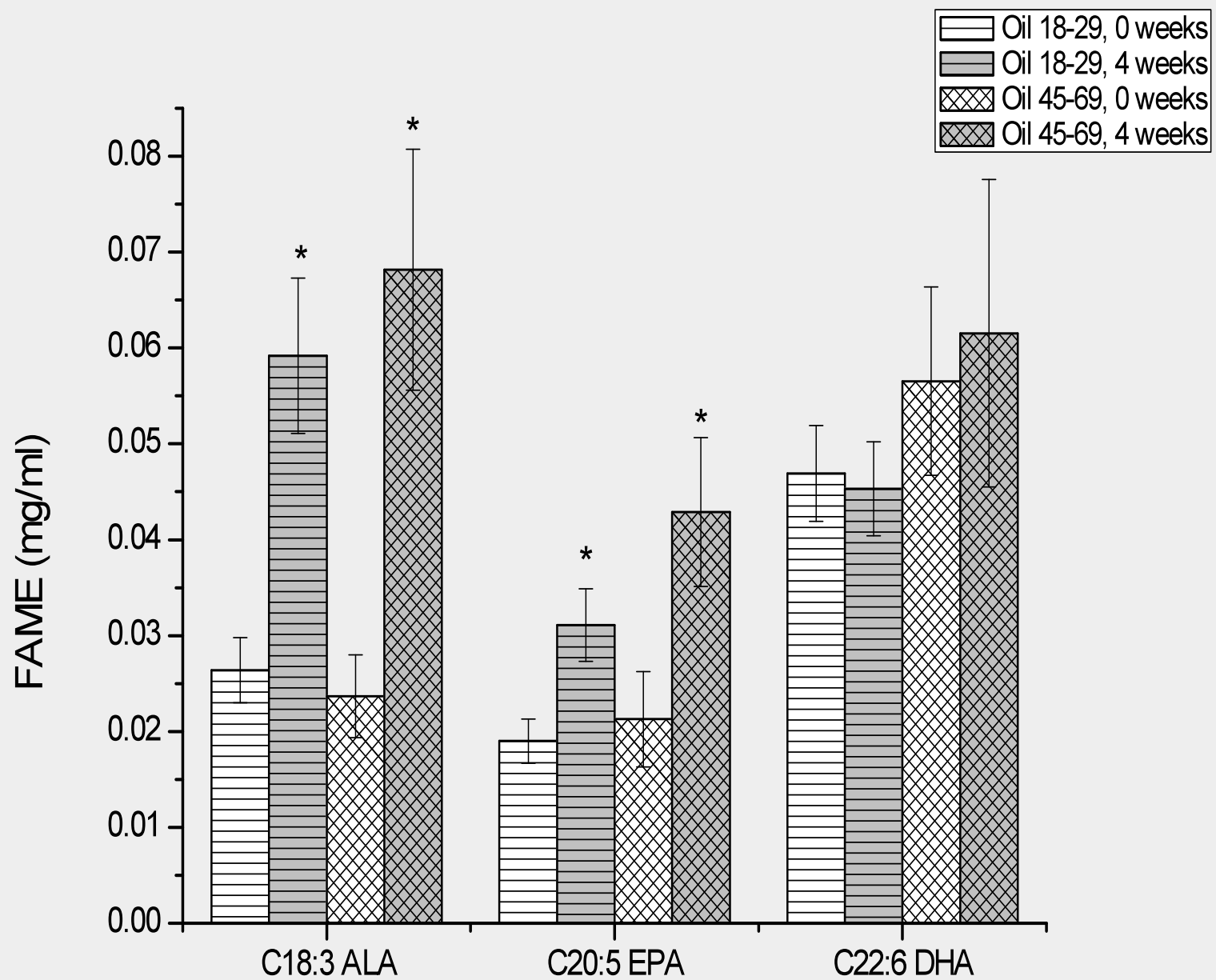
Two age groups:

18-29 years old

45-69 years old

Subjects ingested flaxseed oil (6g ALA) in baked muffins for 4 weeks.





*P<0.05 compared with 0 week.



BENCH TO BEDSIDE TO BETTER LIVING





We have initiated FLAXPAD, a 1 year double blinded, placebo controlled randomized clinical trial that is the first to examine the effects of flaxseed on primary end-points in a patient population with cardiovascular disease.





We will find out if flax decreases heart attacks, stroke and surgical interventions, lowers BP, cholesterol and other fats, decreases arrhythmias, improves exercise performance and alters the genomic response as well.









We will have produced this information while at the same time creating tasty, economical nutritional products that will deliver therapeutic doses of flaxseed (hopefully they will be available to everyone).





**IN THE END,
WE WILL HAVE
TRAVELLED FROM THE
LAB BENCH
TO THE PATIENT
BEDSIDE
ONTO BETTER LIVING
FOR ALL OF US**





**THANKS FOR
YOUR TIME AND
YOUR
ATTENTION!!!**

