

Re: For the fans of Omega-3 in cancer prevention

Source: <http://sci.tech-archive.net/Archive/sci.med.nutrition/2008-01/msg00112.html>

- *From:* ironjustice <teamtanner@xxxxxxxxxxxxx>
 - *Date:* Fri, 11 Jan 2008 19:38:25 -0800 (PST)
-

On Jan 11, 7:26 pm, ironjustice <teamtan...@xxxxxxxxxxxxx> wrote:
linoleic acid isomerase <<

This says the amount of the conversion is governed by amount of ..
source.

"Conversion ratio at about 50% "
"substrate concentration"

Conjugated Linoleic Acid Production by Fermentation
Ming Dong, Hebei University of Technology
Shuting Qi, Hebei University of Technology

Abstract

Lactobacillus acidophilus 1.1854 was used for CLA production in whole milk and alfalfa seed oil was used as substrate. Alfalfa seed oil contained linoleic acid about 40%.

Results showed that alfalfa seed oil addition to the culture improved CLA production, indicating the presence of linoleic acid isomerase activity in the culture.

The concentration of lactic acid bacteria, the incubation time, the substrate concentration, the pH, incubation temperature, the pre-incubation time and the substrate amount of pre-incubation were studied in our research and they are optimized at 2.5%(v/v), 21h, 0.05% (v/v), pH 6.4, 37°C, 11h and 10µL which brought the optimal conversion ratio at about 50%.

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Recommended Citation

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Tom

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Man Is A Herbivore!

<http://tinyurl.com/a3cc3>

DEAD PEOPLE WALKING

<http://tinyurl.com/zk9fk>

On Jan 11, 7:15 pm, ironjustice <teamtan...@xxxxxxxxxxxx>
wrote:linoleic acid isomerase <<

<http://mic.sgmjournals.org/cgi/content/full/153/8/2483>

IMMEDIATE OPEN ACCESS ARTICLE

Microbiology 153 (2007), 2483–2490; DOI 10.1099/mic.0.2006/001966–0
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Heterologous expression of linoleic acid isomerase from
Propionibacterium acnes and anti-proliferative activity of recombinant
trans-10, cis-12 conjugated linoleic acid

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The linoleic acid isomerase enzyme from *Propionibacterium acnes* responsible for bioconversion of linoleic acid to trans-10, cis-12 conjugated linoleic acid (t10, c12 CLA) was cloned and overexpressed in *Lactococcus lactis* and *Escherichia coli*, resulting in between 30 and 50 % conversion rates of the substrate linoleic acid to t10, c12 CLA. The anti-proliferative activities of the fatty acids produced following isomerization of linoleic acid by *L. lactis* and *E. coli* were assessed using the human SW480 colon cancer cell line. Fatty acids generated from both *L. lactis* and *E. coli* contained a mixture of linoleic acid and t10, c12 CLA at a ratio of 1.35 : 1. Following 5 days of incubation of SW480 cells with 5–20 µg ml⁻¹ (17.8–71.3 µM) of the t10, c12 CLA, there was a significant (P<0.001) reduction in growth of the SW480 cancer cells compared with the linoleic acid control. Cell viability after treatment with the highest concentration (20 µg ml⁻¹) of the t10, c12 CLA was reduced to 7.9 % (*L. lactis* CLA) and 19.6 % (*E. coli* CLA), compared with 95.4 % (control linoleic acid)

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and 31.7 % (pure t10, c12 CLA). In conclusion, this is believed to represent the first report in which recombinant strains are capable of producing CLA with an anti-proliferative potential.

Abbreviations: CLA, conjugated linoleic acid; c9, t11 CLA, cis-9, trans-11 CLA; t10, c12 CLA, trans-10, cis-12 conjugated linoleic acid; PAI, P. acnes isomerase

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On Jan 11, 6:35 pm, ironjustice <teamtan...@xxxxxxxxxxxx> wrote: The human gut does produce CLA .<<

"Isomerase activity was found in bacteria"

<http://www.pnas.org/cgi/content/full/103/8/2576>

CLA and other conjugated fatty acids are produced in vivo by double-bond isomerization of polyunsaturated fatty acid (PUFA) precursors (4-6). Isomerase activity was found in bacteria (4) and algae (5, 6).

Appl Biochem Biotechnol. 2007 Dec;143(3):199-211. Links
Linoleic acid isomerase from Propionibacterium acnes: purification, characterization, molecular cloning, and heterologous expression.
Deng MD, Grund AD, Schneider KJ, Langley KM, Wassink SL, Peng SS, Rosson RA.
Bio-Technical Resources, 1035 South 7th Street, Manitowoc, WI 54220, USA. mdd...@xxxxxxxxxx

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Propionibacterium acnes strain ATCC 6919 catalyzes the isomerization of the double bond at the C9 position in linoleic acid (c9,c12, 18:2) to form t10,c12 conjugated linoleic acid (CLA, 18:2). CLA has significant health benefits in animal and human.

The linoleic acid C9 isomerase was purified to an apparent homogeneity by successive chromatography on diethylaminoethyl (DEAE) anion exchange, hydrophobic interaction, and chromatofocusing columns. Two degenerated oligonucleotide primers were synthesized according to the N–terminal peptide sequence to clone, by polymerase chain reaction (PCR), a short nucleotide sequence (62 bp) of the isomerase gene. The linoleic acid isomerase gene (lai) was subsequently cloned by inverse PCR.

The amino acid sequence deduced from the lai coding sequence predicts a protein of 424 amino acid residues (48 kDa), excluding the N–terminal methionine, which was absent in the polypeptide purified from the native host.

The isomerase shares no significant sequence homology to other enzymes except a flavin–binding domain in the N–terminal region.

The recombinant isomerase purified from Escherichia coli showed a typical ultraviolet spectrum for FAD–bound proteins. The recombinant enzyme produced a single isomer of t10,c12–CLA from linoleic acid, as demonstrated by gas chromatography and gas chromatography–mass spectrum analysis.

The recombinant isomerase protein was expressed at high levels in E. coli, but it was almost totally sequestered in inclusion bodies.

The level of active isomerase was increased 376–fold by medium and process optimization in bench–scale fermentors.

PMID: 18057448 [PubMed – in process]

Acta Cryst. (2006). F62, 153–156 [doi:10.1107/S1744309106001229]

In–house SIRAS phasing of the polyunsaturated fatty–acid isomerase from Propionibacterium acnes

A. Liavonchanka, E. Hornung, I. Feussner and M. Rudolph

Abstract: The polyenoic fatty–acid isomerase from Propionibacterium acnes (PAI) catalyzes the double–bond isomerization of linoleic acid to conjugated linoleic acid, which is a dairy– or meat–derived fatty acid in the human diet.

PAI was overproduced in Escherichia coli and purified to homogeneity as a yellow–coloured protein.

The nature of the bound cofactor was analyzed by absorption and fluorescence spectroscopy.

Single crystals of PAI were obtained in two crystal forms.

Cubic shaped crystals belong to space group I213, with a unit–cell parameter of 160.4 Å, and plate–like crystals belong to the monoclinic space group C2, with unit–cell parameters a = 133.7, b = 60.8, c =

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72.2 Å, = 115.8°.

Both crystal forms contain one molecule per asymmetric unit and diffract to a resolution of better than 2.0 Å.

Initial phases were obtained by SIRAS from in-house data from a cubic crystal that was soaked with an unusually low KI concentration of 0.25 M.

Keywords: fatty-acid isomerases; Propionibacterium acnes.

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On Jan 11, 5:08 pm, Taka <taka0...@xxxxxxxx> wrote:
Omega-3 is
Omega-3 <<

I should quit right .. here.
There are no long chain omega-3 in plants. There are long chain
chain
omega-3 in animals and fish products.
Therefore .. ? .. omega-3 and omega-3 are **not** .. the
"same" ..
Long chain and short chain omega-3.

On Jan 11, 5:08 pm, Taka <taka0...@xxxxxxxx> wrote:
Can you say that
man's stomach/intestine can compare to the rumen in its
ability to
produce CLA? <<

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The human gut does produce CLA .

So compared to the gut of a cow .. yes .. the human can produce CLA .

As to QUANTITY of CLA .. then one might have to consume plants for a while to find that out.

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DEAD PEOPLE WALKING<http://tinyurl.com/zk9fk>

On Jan 11, 3:12 pm, "ironjust...@xxxxxxx"
<ironjust...@xxxxxxx> wrote:

Omega-3 have antioxidant /
radical scavenger
mechanism ..

Omega-3 "scavenges" radicals just to be converted to lipid peroxide which does more unrepairable damage than the radicals would do themselves ...

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True antioxidant becomes non-reactive after
accepting the radical or
converts it to water ...

Did you know that .. ?

Since you don't differentiate
.. ****enough**** .. I .. will.

Omega-3 from plants
causes no oxidation.
Omega-3 from fish causes
oxidation.. depletes vitamin
E.

Omega-3 is Omega-3, the supplemental
antioxidants in plant material is
what makes the difference. Whole fish meat
also contains furan fatty
acids acting like antioxidant to protect
Omega-3 from oxidation.

On Jan 9, 6:00 pm, Taka
<taka0...@xxxxxxxxxx>
wrote: CLA is not
present in plants, the
ruminant microorganisms
make it by fermenting
the plant material, that's all.
Same with butyrate. If you
are
getting CLA from plants .. I
guess .. you are a ruminant
<<

Sooo .. you are saying man
doesn't .. ferment his .. plant

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..
material .. ?
Man ferments his food ..
man doesn't need a .. rumen.

Think quantitatively, not qualitatively, here
Tom. Can you say that
man's stomach/intestine can compare to the
rumen in its ability to
produce CLA? And even the ruminants
need to be grazing all day long
to supply enough material for the
fermentation ...

Taka- Hide quoted text -

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