University of Reading

Metabolism and functional effects of plant-derived omega-3 fatty acids in humans

Article

Accepted Version

Creative Commons: Attribution-Noncommercial-No Derivative Works 4.0

Baker, E. J., Miles, E. A., Burdge, G. C., Yaqoob, P. ORCID: https://orcid.org/0000-0002-6716-7599 and Calder, P. C. (2016) Metabolism and functional effects of plant-derived omega-3 fatty acids in humans. Progress in Lipid Research, 64. pp. 30-56. ISSN 1873-2194 doi: 10.1016/j.plipres.2016.07.002 Available at https://centaur.reading.ac.uk/68680/

It is advisable to refer to the publisher's version if you intend to cite from the work. See Guidance on citing.

To link to this article DOI: http://dx.doi.org/10.1016/j.plipres.2016.07.002

Publisher: Elsevier

All outputs in CentAUR are protected by Intellectual Property Rights law, including copyright law. Copyright and IPR is retained by the creators or other copyright holders. Terms and conditions for use of this material are defined in the End User Agreement.

www.reading.ac.uk/centaur

University of Reading

CentAUR

Central Archive at the University of Reading

Reading's research outputs online

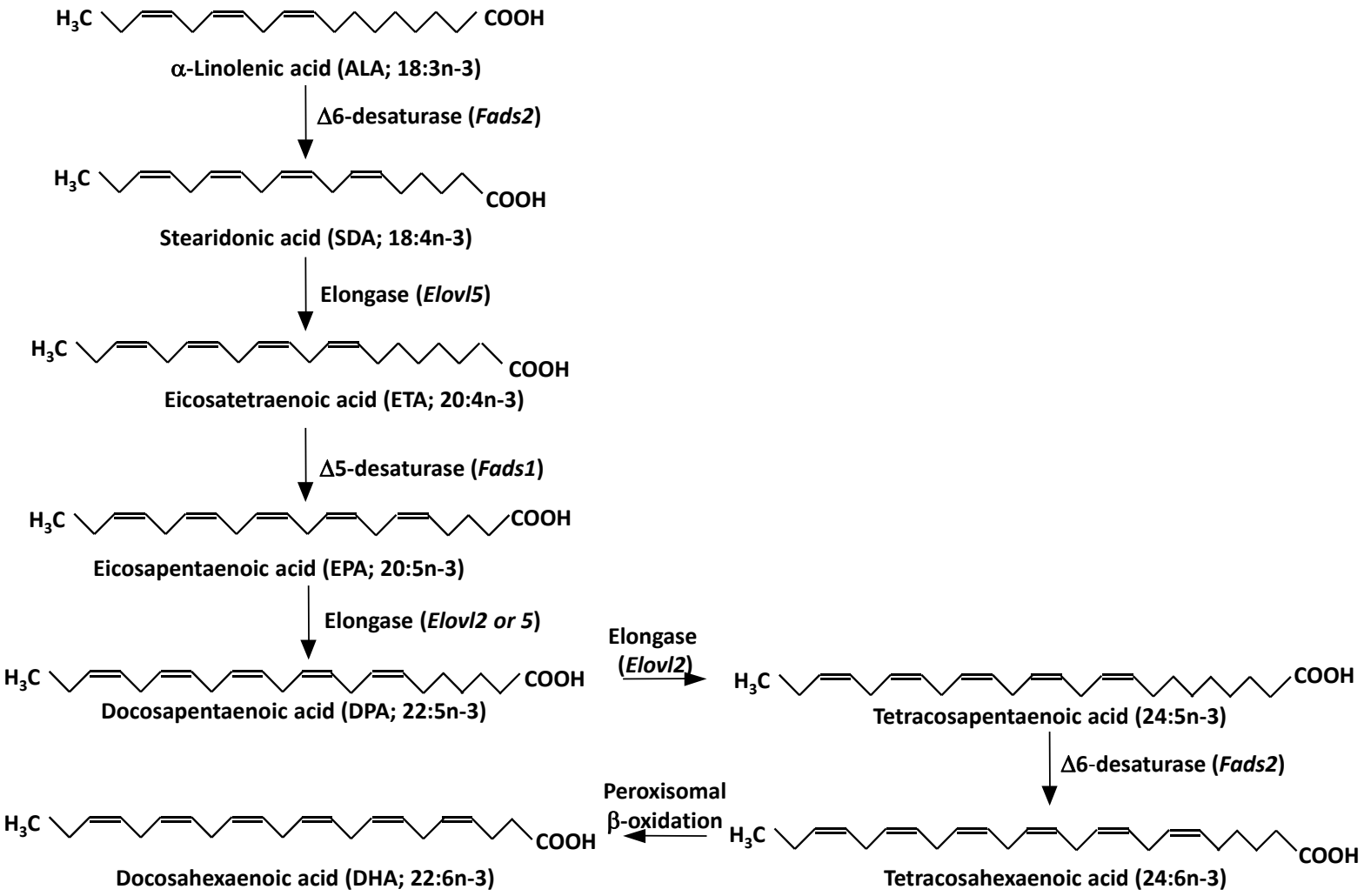
H3C
COOH
α-Linolenic acid (ALA; 18:3n-3)
Δ6-desaturase (Fads2)
Stearidonic acid (SDA; 18:4n-3)
Elongase (Elovl5)
Eicosatetraenoic acid (ETA; 20:4n-3)
Δ5-desaturase (Fads1)
Eicosapentaenoic acid (EPA; 20:5n-3)
Elongase (Elovl2 or 5)
Docosapentaenoic acid (DPA; 22:5n-3)
Elongase (Elovl2)
Tetracosapentaenoic acid (24:5n-3)
Δ6-desaturase (Fads2)
Tetracosahexaenoic acid (24:6n-3)
Peroxisomal β-oxidation
Docosahexaenoic acid (DHA; 22:6n-3)

Figure 1

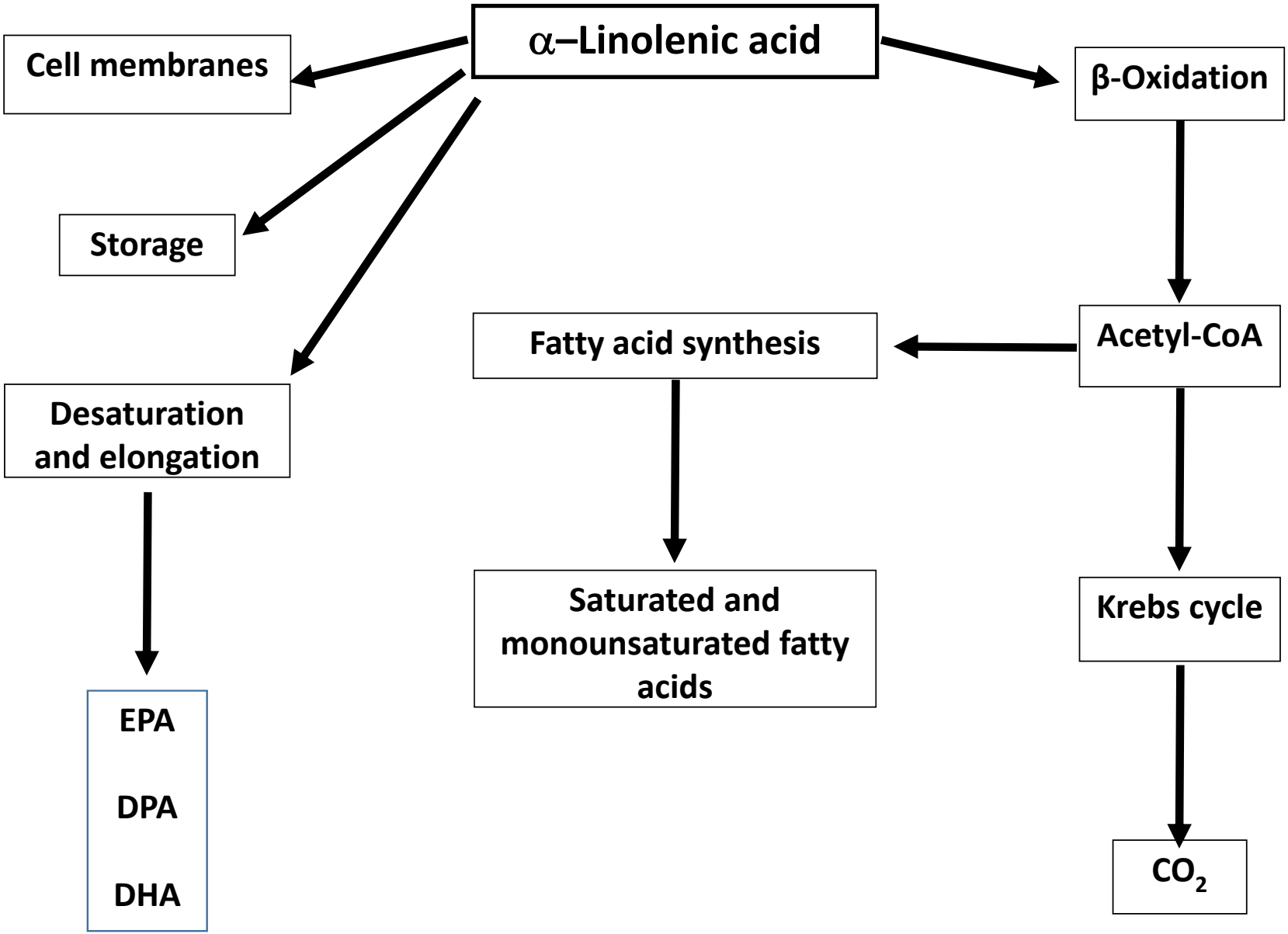
α–Linolenic acid
Cell membranes
Storage
Desaturation and elongation
EPA
DPA
DHA
β-Oxidation
Acetyl-CoA
Fatty acid synthesis
Saturated and monounsaturated fatty acids
Krebs cycle
CO_2

Figure 2

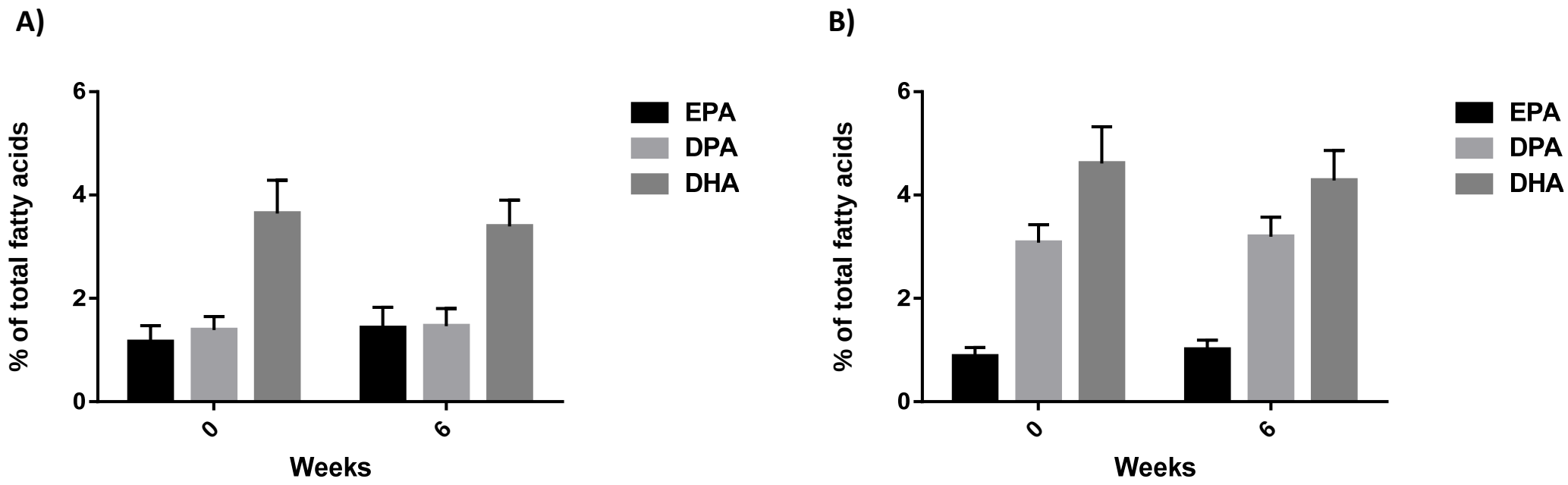

Figure 3

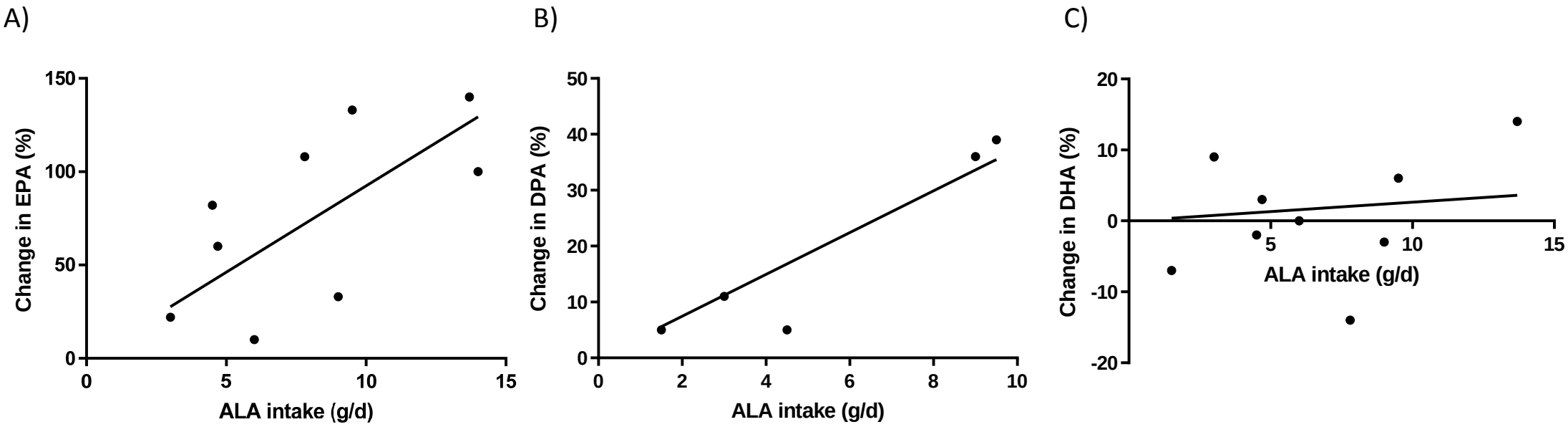
A)
Change in EPA (%)
150
100
50
0
0
5
10
15
ALA intake (g/d)
B)
Change in DPA (%)
50
40
30
20
10
0
0
2
4
6
8
10
ALA intake (g/d)
C)
Change in DHA (%)
20
10
0
-10
-20
5
10
15
ALA intake (g/d)

Figure 4

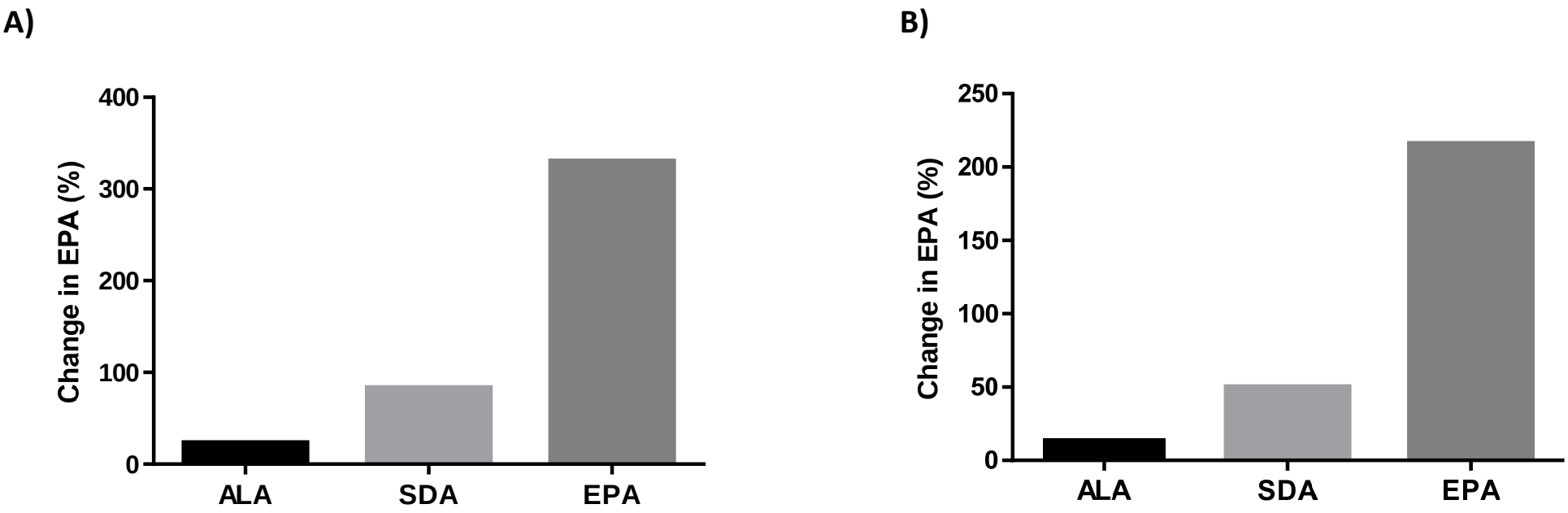
A)
Change in EPA (%)
400
300
200
100
0
ALA
SDA
EPA
B)
Change in EPA (%)
250
200
150
100
50
0
ALA
SDA
EPA

Figure 5