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Nutrizione nella donna con carcinoma mammario

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Nessun conflitto di interesse da dichiarare relativamente a questa presentazione

Epidemiologia del carcinoma mammario

Estimated New Cases

Breast	266,120	30%
Lung & bronchus	112,350	13%
Colon & rectum	64,640	7%
Uterine corpus	63,230	7%
Thyroid	40,900	5%
Melanoma of the skin	36,120	4%
Non-Hodgkin lymphoma	32,950	4%
Pancreas	26,240	3%
Leukemia	25,270	3%
Kidney & renal pelvis	22,660	3%
All Sites	**878,980**	**100%**

Estimated Deaths

Lung & bronchus	70,500	25%
Breast	40,920	14%
Colon & rectum	23,240	8%
Pancreas	21,310	7%
Ovary	14,070	5%
Uterine corpus	11,350	4%
Leukemia	10,100	4%
Liver & intrahepatic bile duct	9,660	3%
Non-Hodgkin lymphoma	8,400	3%
Brain & other nervous system	7,340	3%
All Sites	**286,010**	**100%**

In Italia **nel 2020** 55.000 nuove diagnosi di carcinoma della mammella femminile

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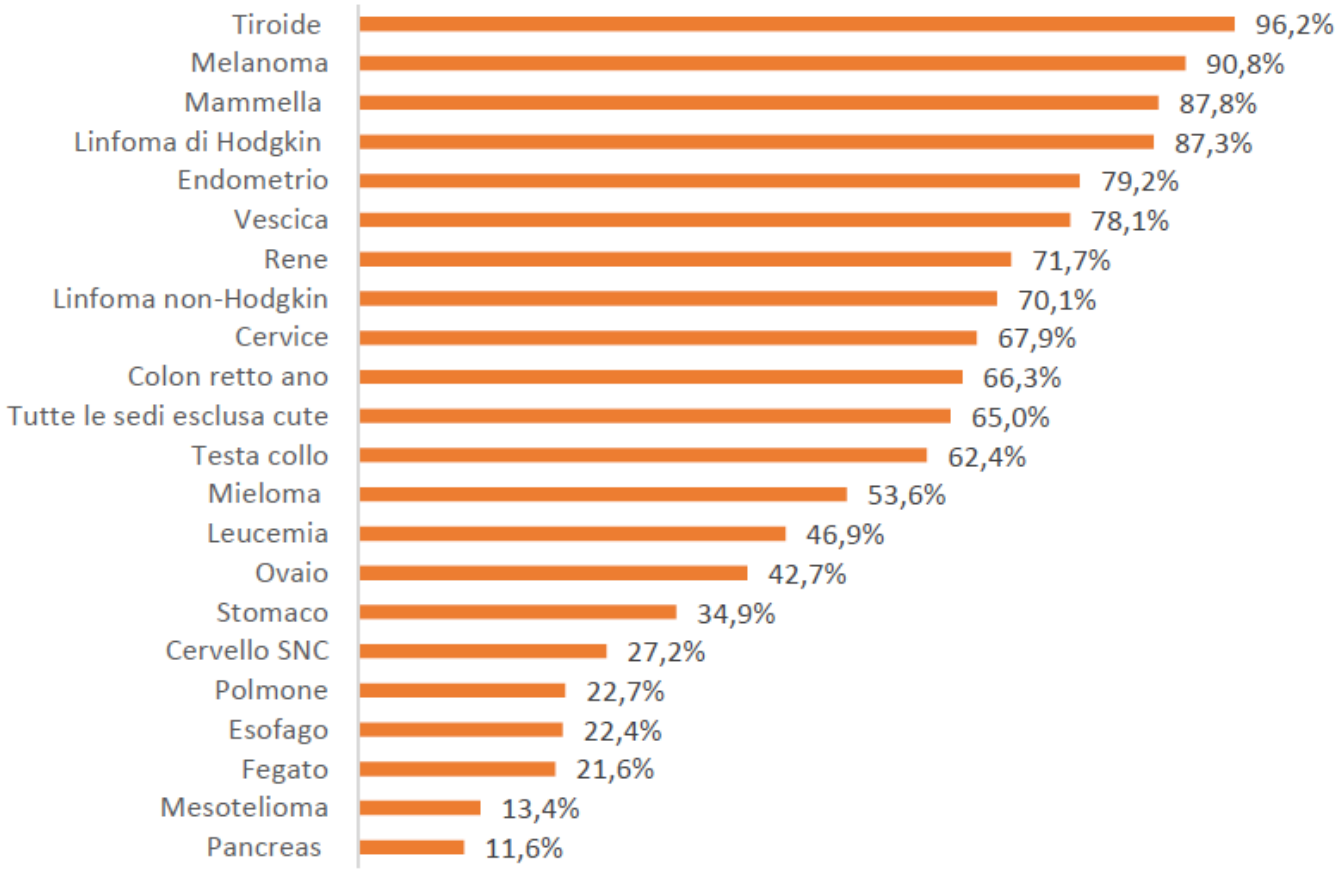
Figura 2. Sopravvivenza netta a 5 anni dalla diagnosi.
Femmine, età ≥ 15 anni
Casi incidenti nel periodo 2010-2014, con follow-up al 2018
(fonte dei dati: "I numeri del cancro in Italia 2021")



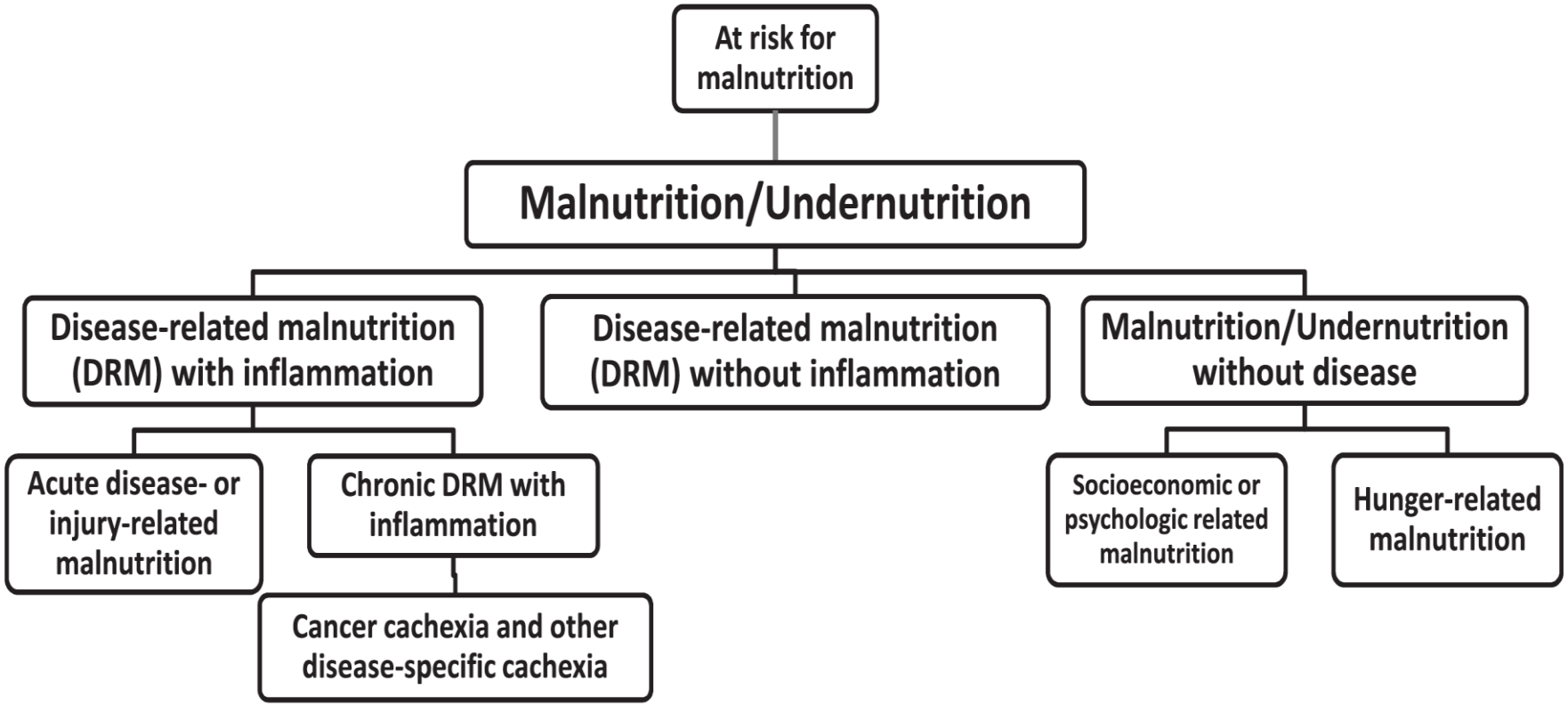


Fig. 2. Diagnoses tree of malnutrition; from at risk for malnutrition, basic definition of malnutrition to aetiology-based diagnoses

Cederholm T, et al. Clin Nutr 2017

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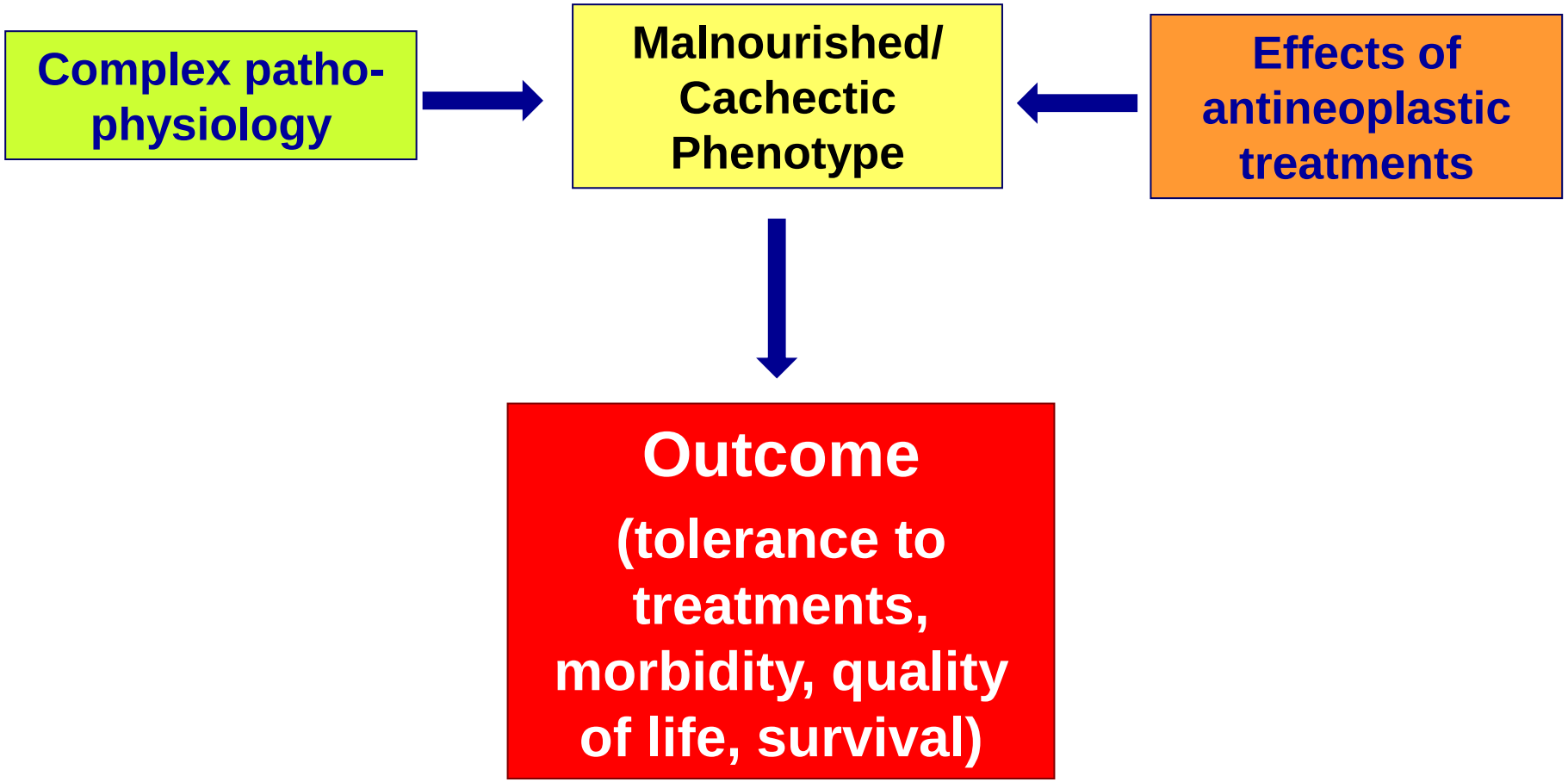
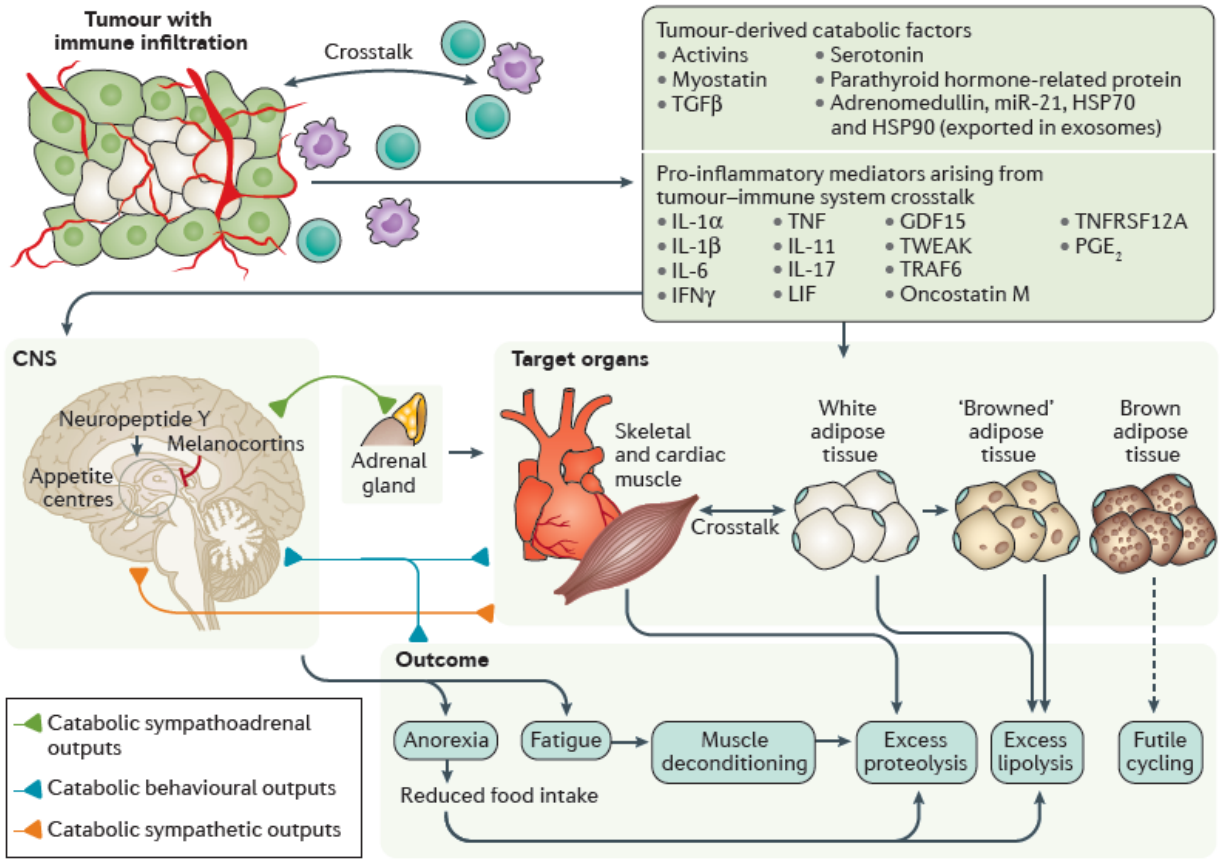
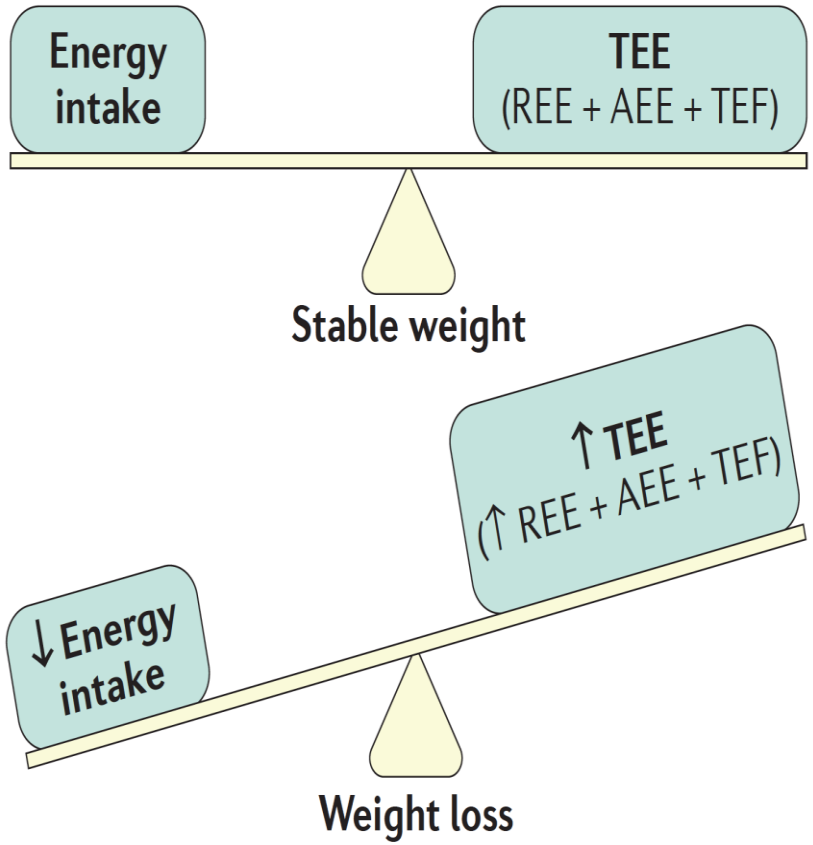
Cancer-related weight loss/malnutrition/cachexia



Mechanisms underlying cancer-related weight loss



Actors and targets in the pathophysiology of cancer cachexia



Negative energy balance is a driver of cancer-related malnutrition and cachexia

Baracos VE et al, 2018

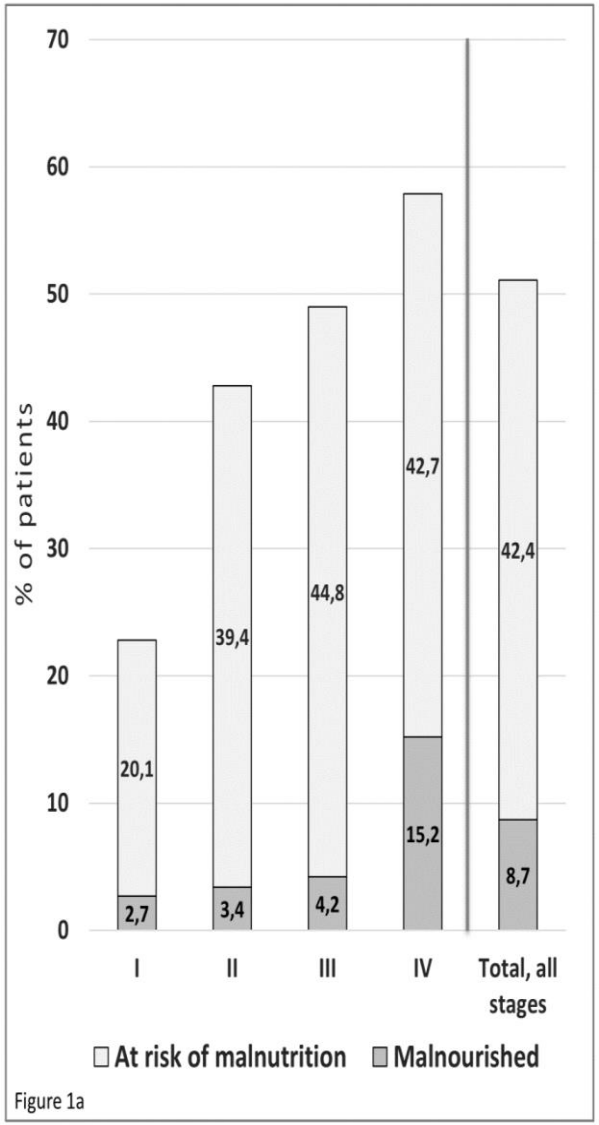


Figure 1a

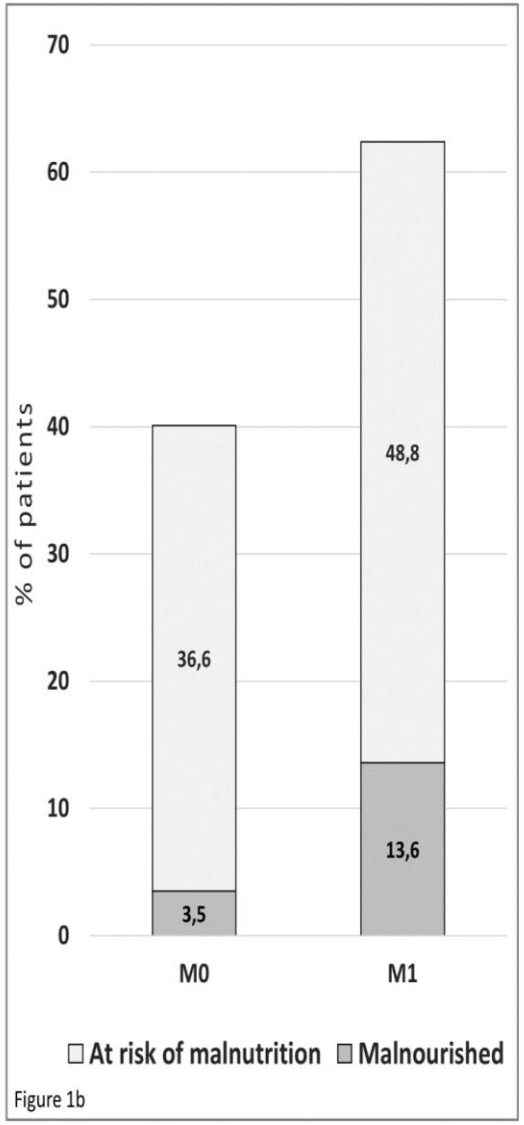
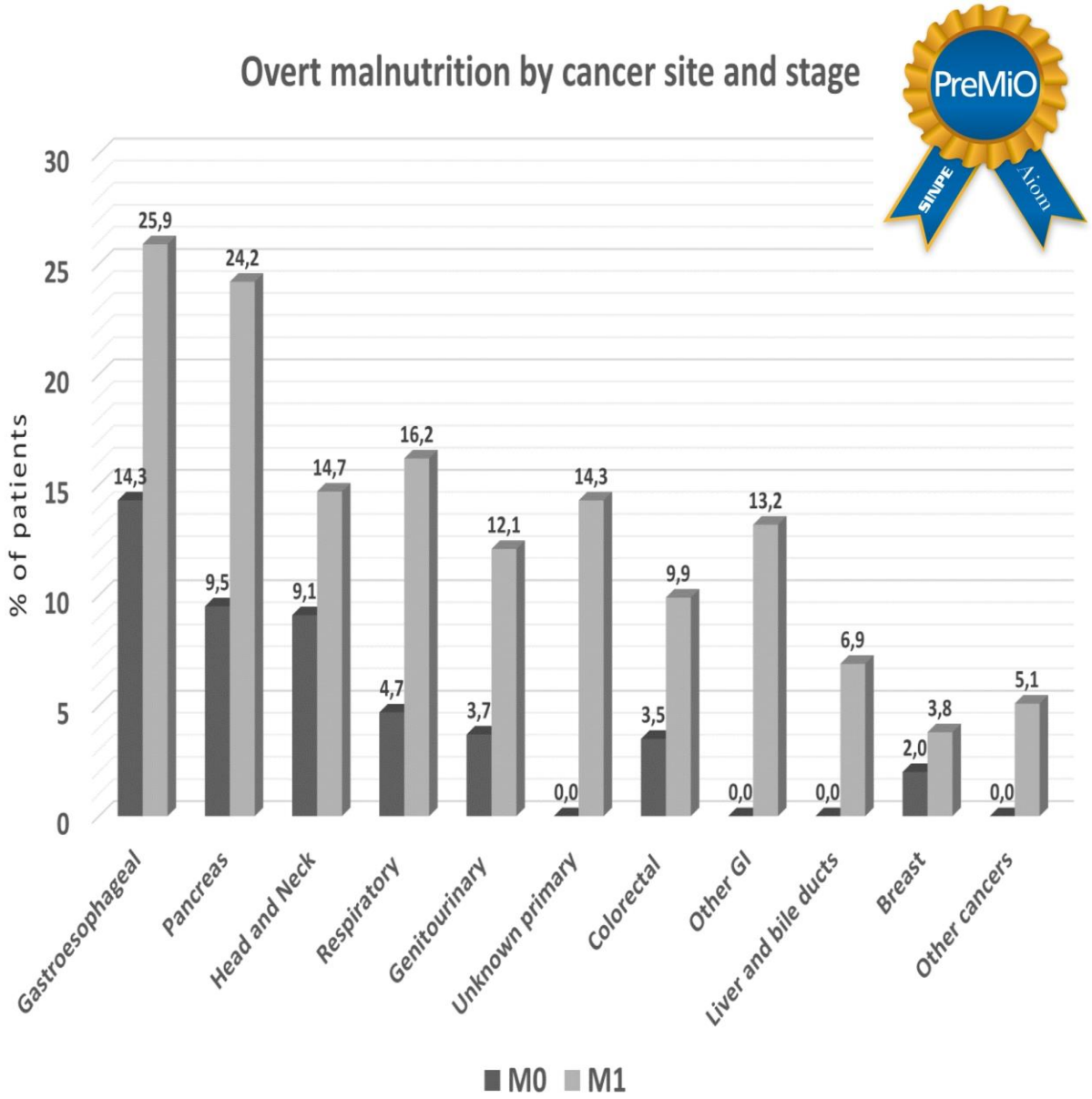


Figure 1b

Figure 1. PreMiO patients with malnutrition or malnutrition risk using MNA scoring with results shown by tumor stage and for all tumors (Figure 1a) as well as classified in M0 and M1 groups (Figure 1b) (N = 1925) ($p<0.001$ at ANOVA among cancer stage groups). Malnutrition was defined as MNA score < 17, while risk of malnutrition was represented by a MNA scores of 17 to 23.5). M0 = stage I-III, M1 = stage IV



Prevalence of overt malnutrition by cancer site (% of patients with specified tumor type), with malnutrition defined as MNA score < 17 (N = 1925). M0 = stage I-III, M1 = stage IV ($p<0.001$ at ANOVA among cancer site groups)

Muscaritoli M, et al. Oncotarget 2017

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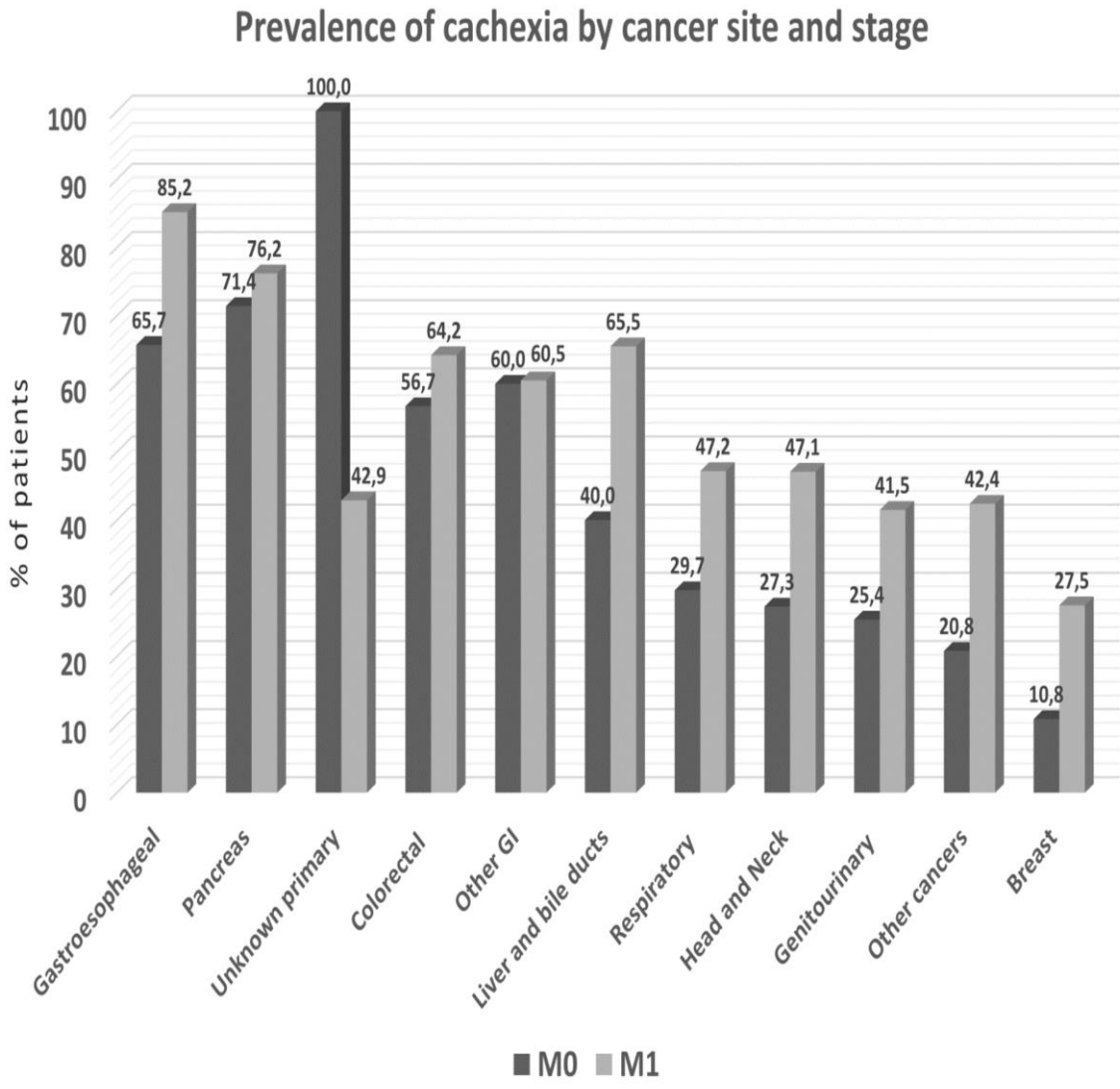
Prevalence of cachexia by primary tumor type in the study population (N = 1952).
M0 = stage I-III, M1 = stage IV. ($p<0.001$ at ANOVA among cancer site groups)



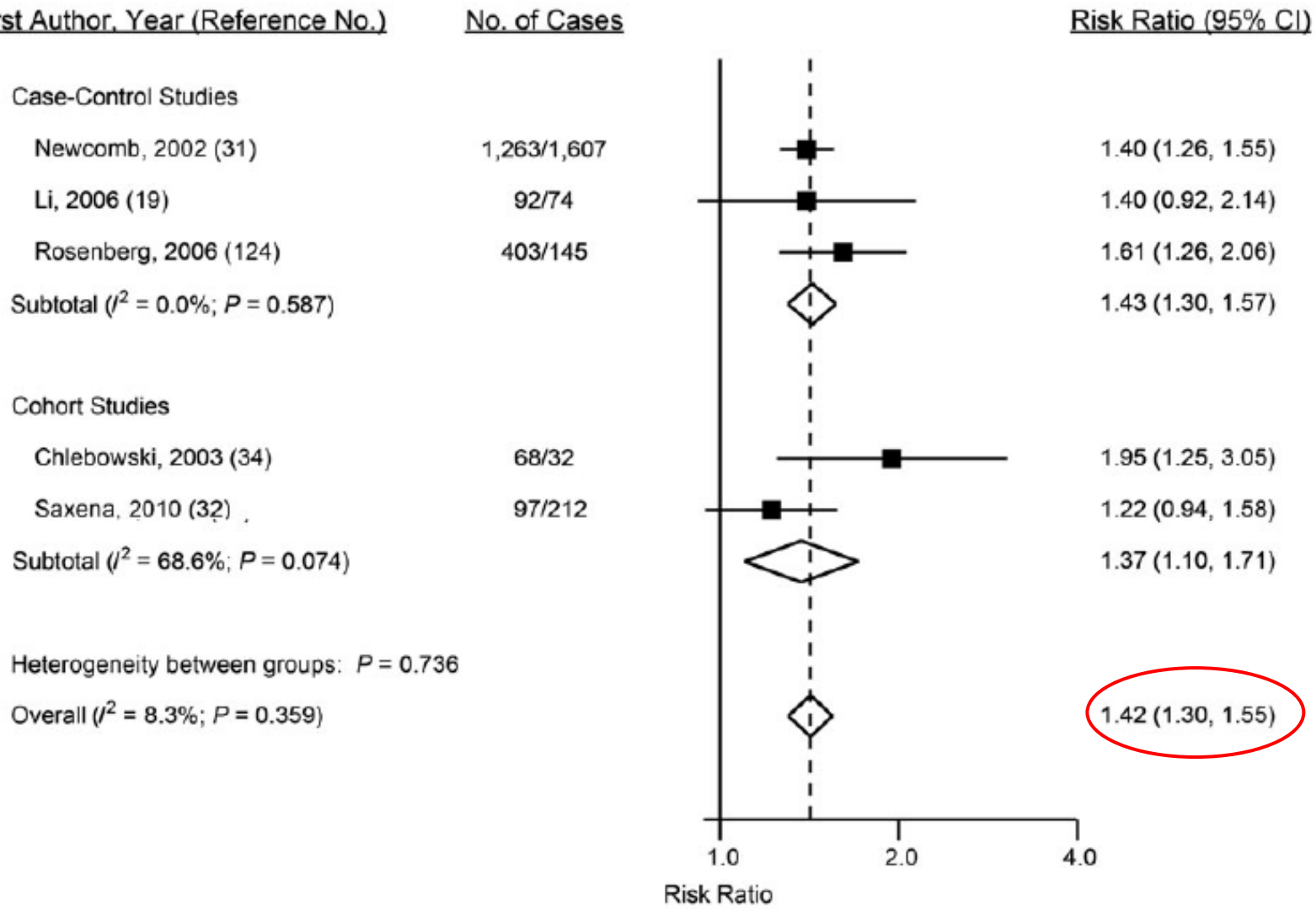
Department of Translational and Precision Medicine

Muscaritoli M, et al. Oncotarget 2017

Table 2: Patient appetite scores by cancer site, based on FAACT (*N*=1949) and VAS scores (*N*=1857)

Cancer site	FAACT M0	FAACT M1	FAACT Total	VAS appetite M0	VAS appetite M1	VAS appetite total
Breast	33 ±5	29 ±5	32 ±5	73 ±20	69 ±19	73 ±20
Genitourinary tract	32 ±5	28 ±6	30 ±6	72 ±18	61 ±22	67 ±21
Colorectal	32 ±5	29 ±5	30 ±5	72 ±23	65 ±22	68 ±22
Lung	31 ±5	29 ±5	29 ±6	71 ±24	64 ±23	66 ±23
Other cancer[1]	33 ±6	29 ±6	32 ±6	78 ±22	69 ±21	75 ±22
Gastroesophageal	27 ±6	23 ±6	25 ±6	58 ±23	52 ±21	54 ±21
Pancreatic	28 ±4	24 ±7	25 ±6	62 ±22	48 ±27	53 ±26
Other GI	34 ±5	28 ±6	30 ±5	69 ±18	62 ±21	63 ±21
Liver/bile duct	33 ±2	26 ±5	28 ±5	82 ±8	62 ±21	65 ±20
Head and neck	33 ±6	30 ±5	31 ±5	75 ±23	64 ±19	68 ±22
Unknown primary site[2]	26	25±6	28 ±6	20	45 ±17	55 ±24
ALL CANCERS	32 ±5	28 ±6	30 ±6	72 ±21	62 ±23	67 ±23

ASSOCIATION BETWEEN BODY MASS INDEX ≥30 kg/m² AND POSTMENOPAUSAL BREAST CANCER



Munsell MF, et al. Epidemiol Rev 2014

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STILI DI VITA NELLA PREVENZIONE DEL CARCINOMA MAMMARIO

TABLE 1. World Cancer Research Fund Prevention Guidelines for Breast Cancer and Car

	Breast Cancer Risk Reduction
1. Be as lean as possible without becoming underweight	✓✓
2. Be physically active for at least 30 minutes every day	✓✓
3. Avoid sugary drinks and limit consumption of energy-dense foods	✓✓ (to achieve weight control)
4. Eat more vegetables, fruits	No effect
5. Eat more whole grains and legumes such as beans	✓✓
6. Limit red meats (i.e., beef, pork, and lamb) and avoid processed meats	Modest effect with processed meat ✓✓
7. Limit alcoholic drinks to 2 for men and 1 for women per day	✓✓
8. Limit consumption of salty foods and foods processed with salt	No effect
9. Do not use nutritional or vitamin supplements to reduce risk of disease	✓✓✓

Abbreviation: CVD, cardiovascular disease.
✓✓✓ = Supported by meta analyses of randomized trials or one or more randomized trials.
✓✓ = Association in three or more observational studies.
✓ = Association in one or two observational studies.

WCRF/AICR, 2020

WCRF/AICR recommendations

WCRF/AICR, 2020

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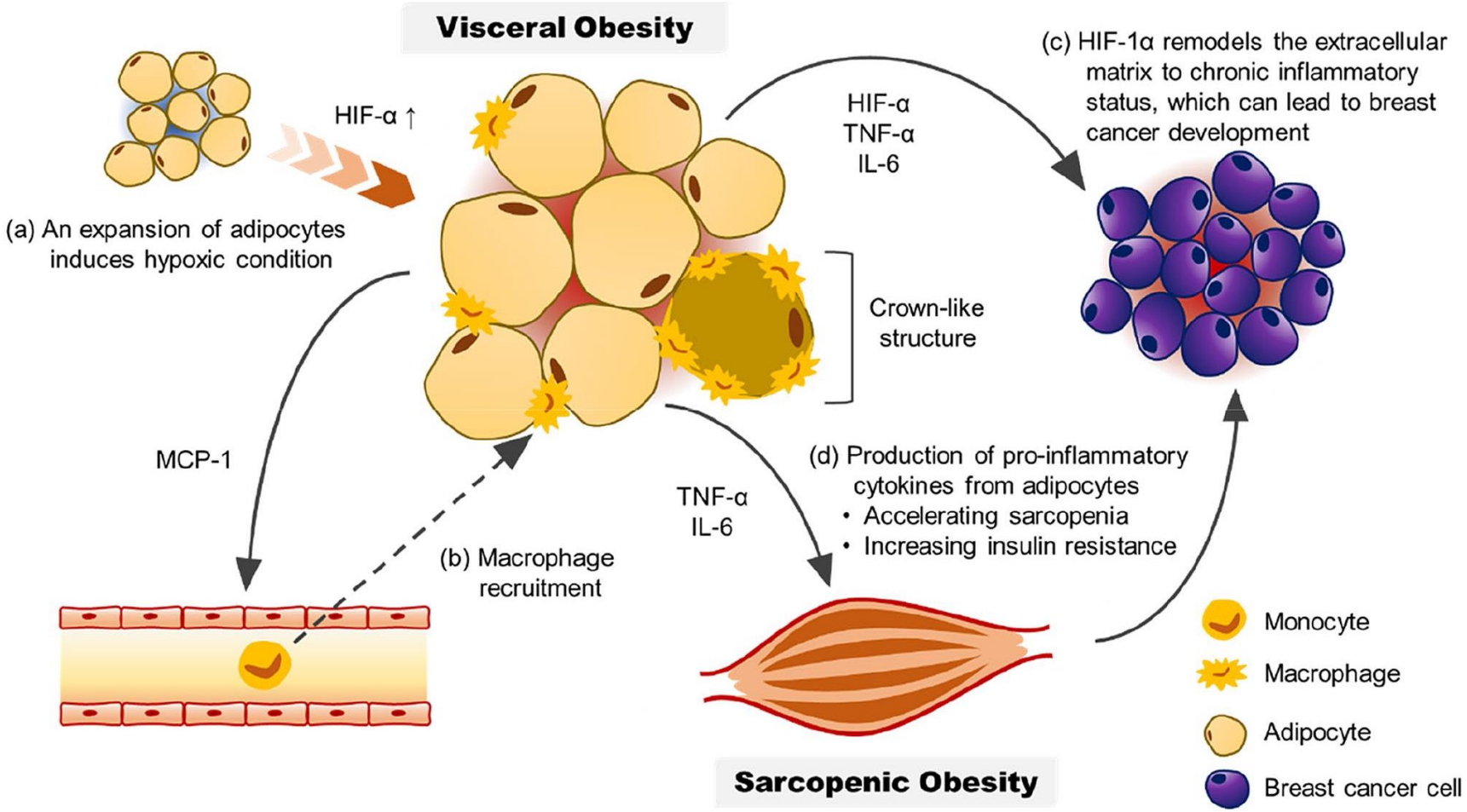
The physiologic roles of specific body composition phenotypes



Iwase T, et al. Breast Cancer Research and Treatment 2021

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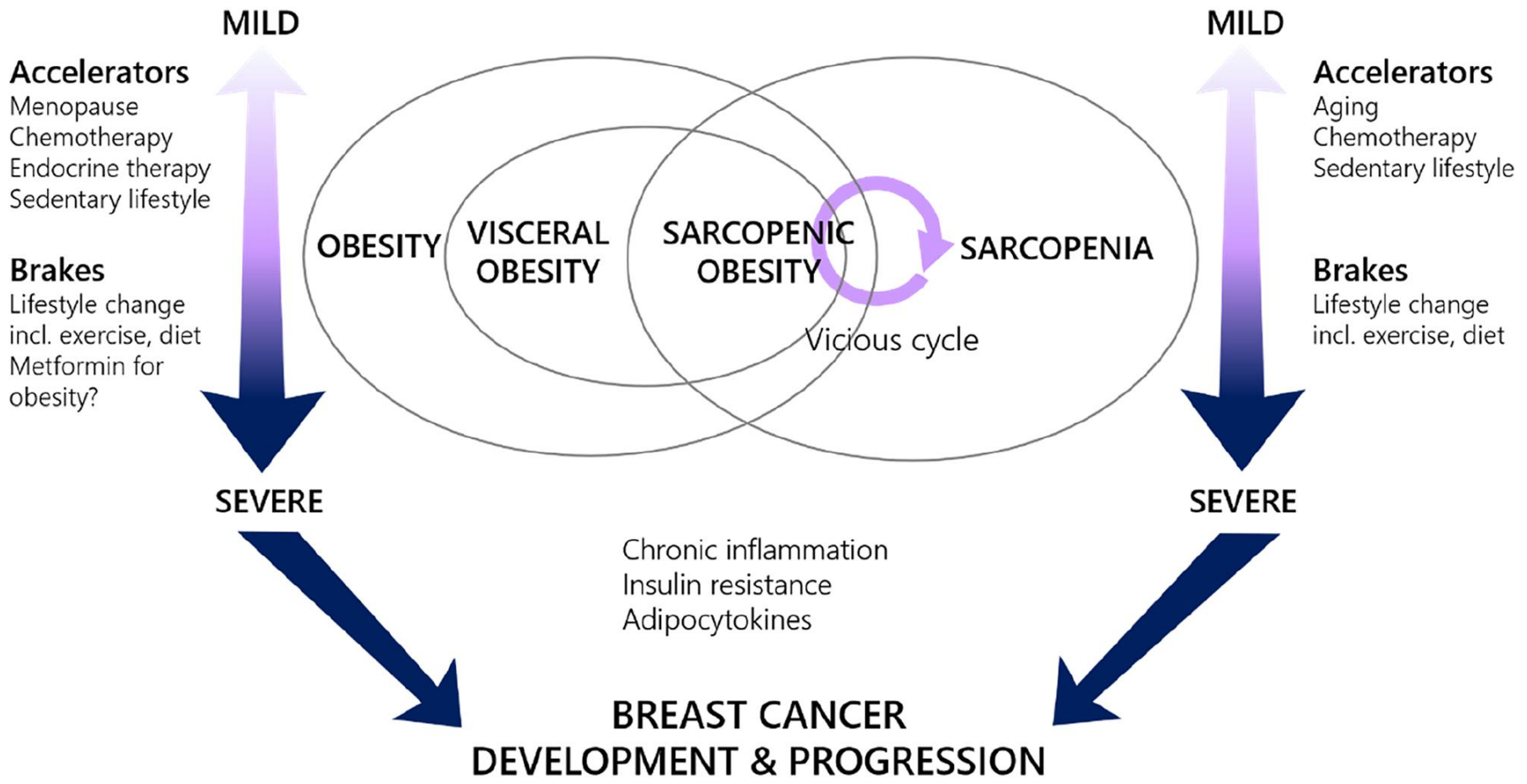
Proposed relationship between body composition phenotype and breast cancer



Iwase T, et al. Breast Cancer Research and Treatment 2021

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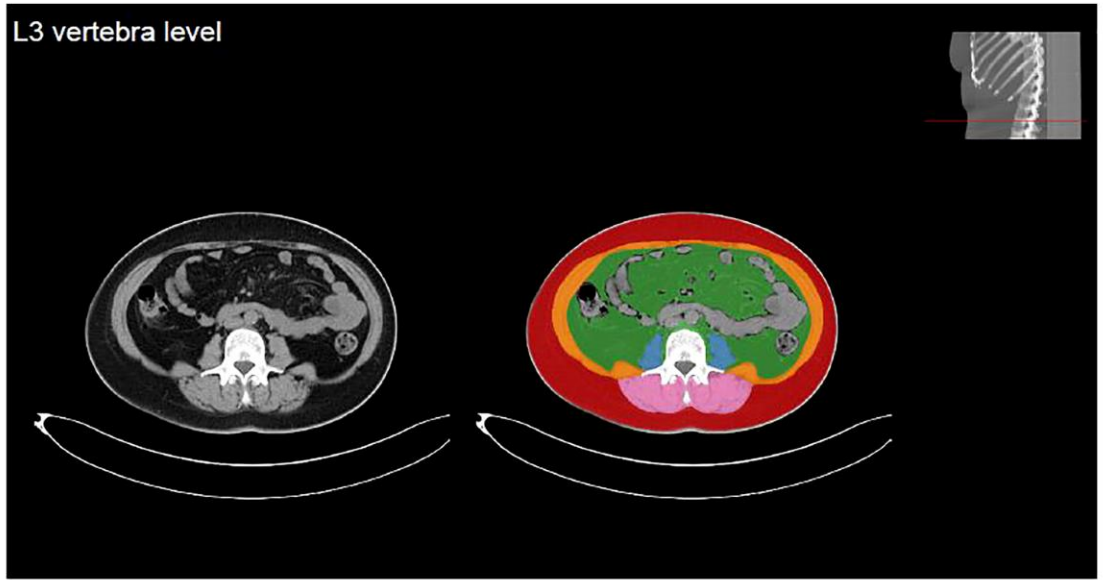
A.I.- assisted body composition assessment by CT scan



Fat	
Subcutaneous	Visceral
173.4 cm² | 31.0% | -94.3 HU	163.0 cm² | 29.1% | -92.2 HU

Muscle		
Psoas	Abdominal	Long spine
13.1 cm² | 2.3% | 33.2 HU	60.1 cm² | 10.7% | 15.1 HU	42.5 cm² | 7.6% | 22.3 HU

FIGURE 1
Screenshot generated by the software after performing an automatic segmentation at the level of the third lumbar vertebra and report of the measurements of SAT, VAT and SMA carried out. SAT values are indicated in red and VAT values in green. SMA is obtained by summing the areas of the psoas, the abdominal and the long spinal muscles indicated in blue, orange and pink respectively (13.1 + 60.1 + 42.5 = 115.7 cm^2). SMI is then calculated as the ratio of SMA to the height squared of the patients.

Kripa e, et al. Front Oncol, 2022

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A total of 2,948 Chinese female patients with breast cancer have been included in this retrospective study.

frontiers | Frontiers in Oncology

TYPE Original Research
PUBLISHED 20 September 2022
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OPEN ACCESS

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Association of body composition with clinical outcome in Chinese women diagnosed with breast cancer

Xinyi Liu[1,2†], Enming Zhang[2†], Suxing Wang[2], Yixiao Shen[2], Kaiwen Xi[3] and Qiong Fang[2*]

[1]Department of Nursing, Shanghai Ninth People's Hospital, Shanghai Jiao Tong University School of Medicine, Shanghai, China, [2]School of Nursing, Shanghai Jiao Tong University, Shanghai, China, [3]Department of Orthopedics, Ruijin Hospital, Shanghai Jiao Tong University School of Medicine, Shanghai, China

Body composition and DFS in BC

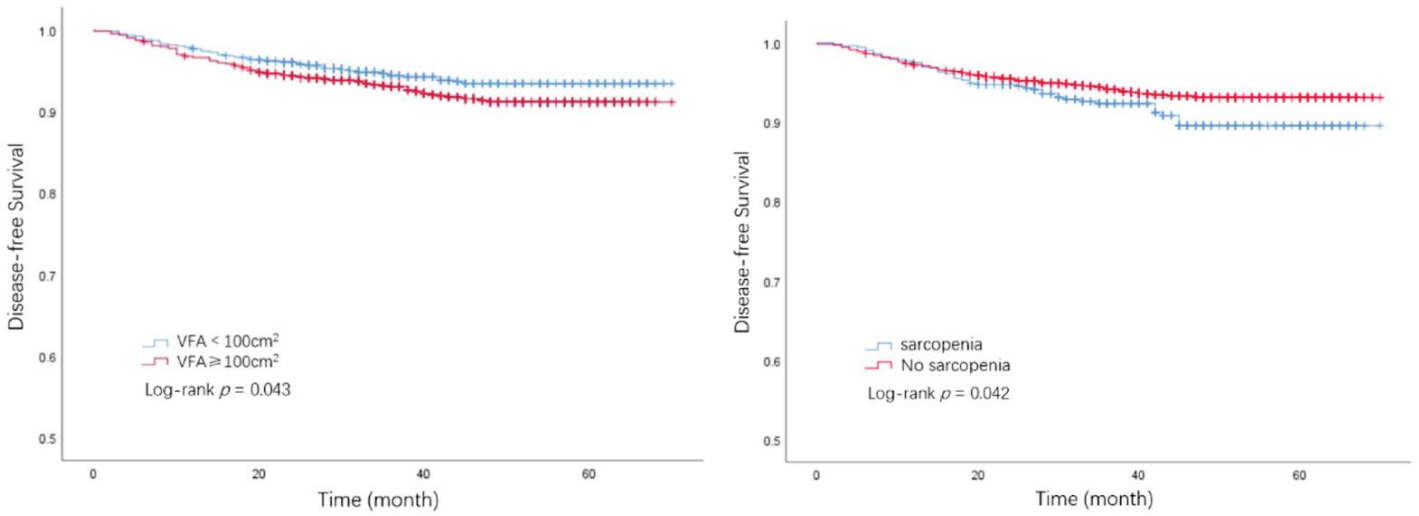

FIGURE 1
Kaplan–Meier plot of disease-free survival by VFA and ASMI. **(A)** VFA and disease-free survival. **(B)** ASMI and disease-free survival. VFA, visceral fat area; ASMI, appendicular skeletal muscle mass.

Front Oncol 2022

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Body composition and OS in BC

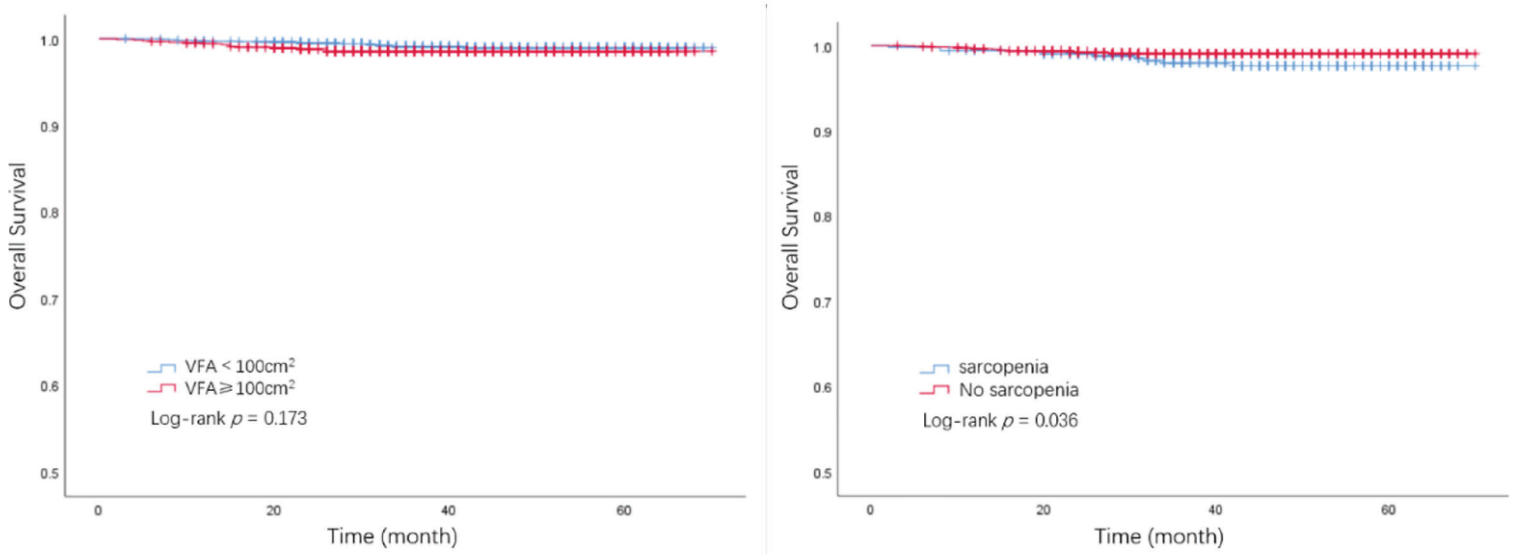

FIGURE 2
Kaplan–Meier plot of overall survival by VFA and ASMI. **(A)** VFA and disease-free survival. **(B)** ASMI and disease-free survival. VFA, visceral fat area; ASMI, appendicular skeletal muscle mass.

Front Oncol 2022

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SPECIALTY SECTION
This article was submitted to
Cancer Imaging and
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a section of the journal
Frontiers in Oncology

Do body composition parameters correlate with response to targeted therapy in ER+/HER2- metastatic breast cancer patients? Role of sarcopenia and obesity

Endi Kripa*, Veronica Rizzo, Francesca Galati, Giuliana Moffa, Federica Cicciarelli, Carlo Catalano and Federica Pediconi

Department of Radiological, Oncological and Pathological Sciences, Sapienza University of Rome, Rome, Italy

JAMA Oncology | Original Investigation

Association of Low-Fat Dietary Pattern With Breast Cancer Overall Survival

A Secondary Analysis of the Women's Health Initiative Randomized Clinical Trial

Rowan T. Chlebowski, MD, PhD; Aaron K. Aragaki, MS; Garnet L. Anderson, PhD; Michael S. Simon, MD, MPH; JoAnn E. Manson, MD, DrPH; Marian L. Neuhouser, PhD; Kathy Pan, MD; Marcia L. Stefanick, PhD; Thomas E. Rohan, MBBS, PhD; Dorothy Lane, PhD; Lihong Qi, PhD; Linda Snetselaar, PhD; Ross L. Prentice, PhD

This was a secondary analysis of the **Women's Health Initiative** randomized clinical trial that was conducted at 40 US clinical centers

Key Points

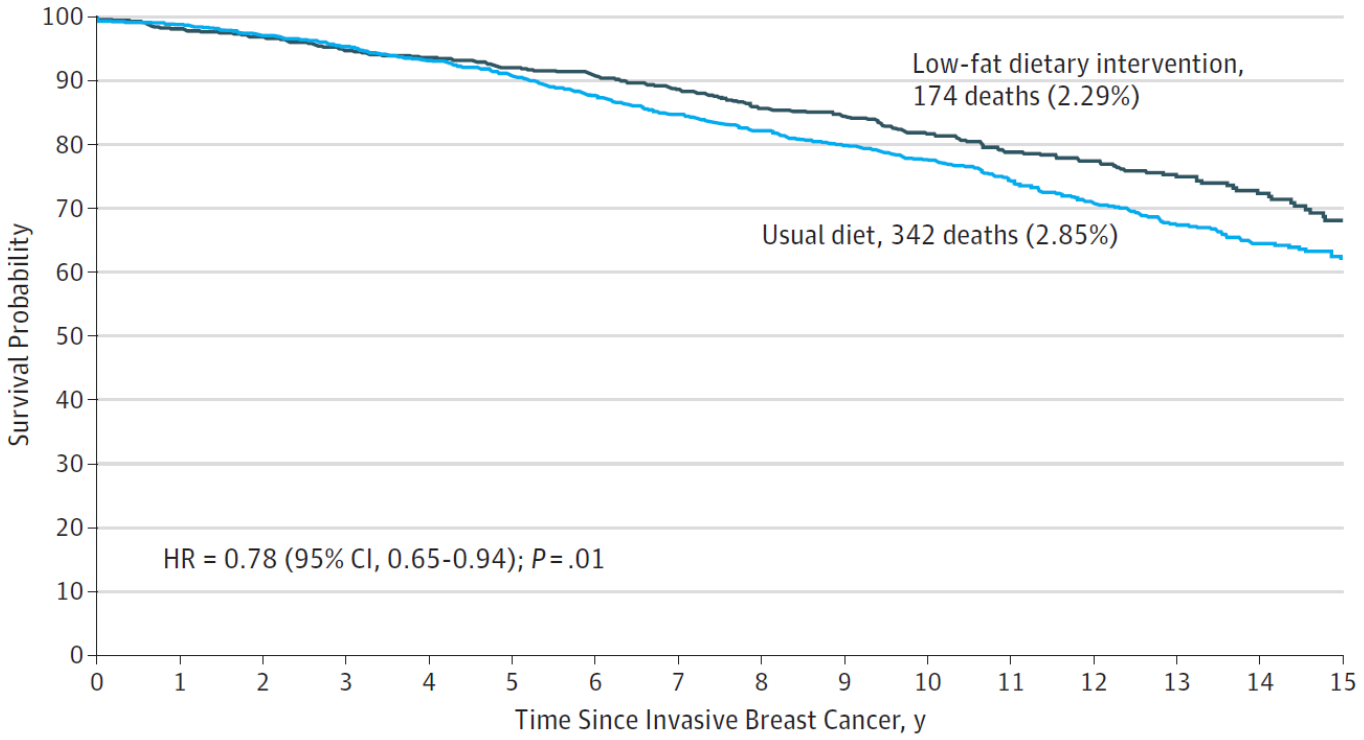
Question Is implementation of a low-fat eating pattern associated with breast cancer outcome?

Finding In this secondary analysis of the Women's Health Initiative randomized clinical trial that included 1764 postmenopausal women who received a diagnosis of breast cancer during the dietary intervention period, those randomized to a low-fat dietary pattern had increased breast cancer overall survival.

Meaning A dietary change may be able to influence breast cancer outcome.

JAMA Oncol. 2018;4(10):e181212. doi:10.1001/jamaoncol.2018.1212

Figure 2. Dietary Modification Association With Breast Cancer Overall Survival



No. at risk

Low-fat diet	671	659	651	636	629	618	610	595	575	543	479	393	313	239	165	99
Usual diet	1093	1081	1062	1043	1019	993	959	926	898	837	724	600	473	353	253	141

Kaplan-Meier estimates for breast cancer overall survival (survival from diagnosis with death from any cause) among the 1764 breast cancer cases diagnosed during the dietary intervention period, measured from cancer diagnosis and observed through September 2013. Summary statistics are from a Cox model stratified by age at diagnosis, randomization status in the hormone therapy trials, and study period (intervention period, postintervention period extension 1, or postintervention period extension 2; time dependent). The *P* value corresponds to a 2-sided score (log-rank) test. Percentages are annualized. HR indicates hazard ratio.

JAMA Oncol. 2018;4(10):e181212. doi:10.1001/jamaoncol.2018.1212

Breast Cancer Research and Treatment (2019) 173:145–154
https://doi.org/10.1007/s10549-018-4982-9

CLINICAL TRIAL

Dietary intervention among breast cancer survivors increased adherence to a Mediterranean-style, anti-inflammatory dietary pattern: the Rx for Better Breast Health Randomized Controlled Trial

Krystle E. Zuniga[1] · Dorothy Long Parma[2] · Edgar Muñoz[2] · Mackenzie Spaniol[2] · Michael Wargovich[3] · Amelie G. Ramirez[2]

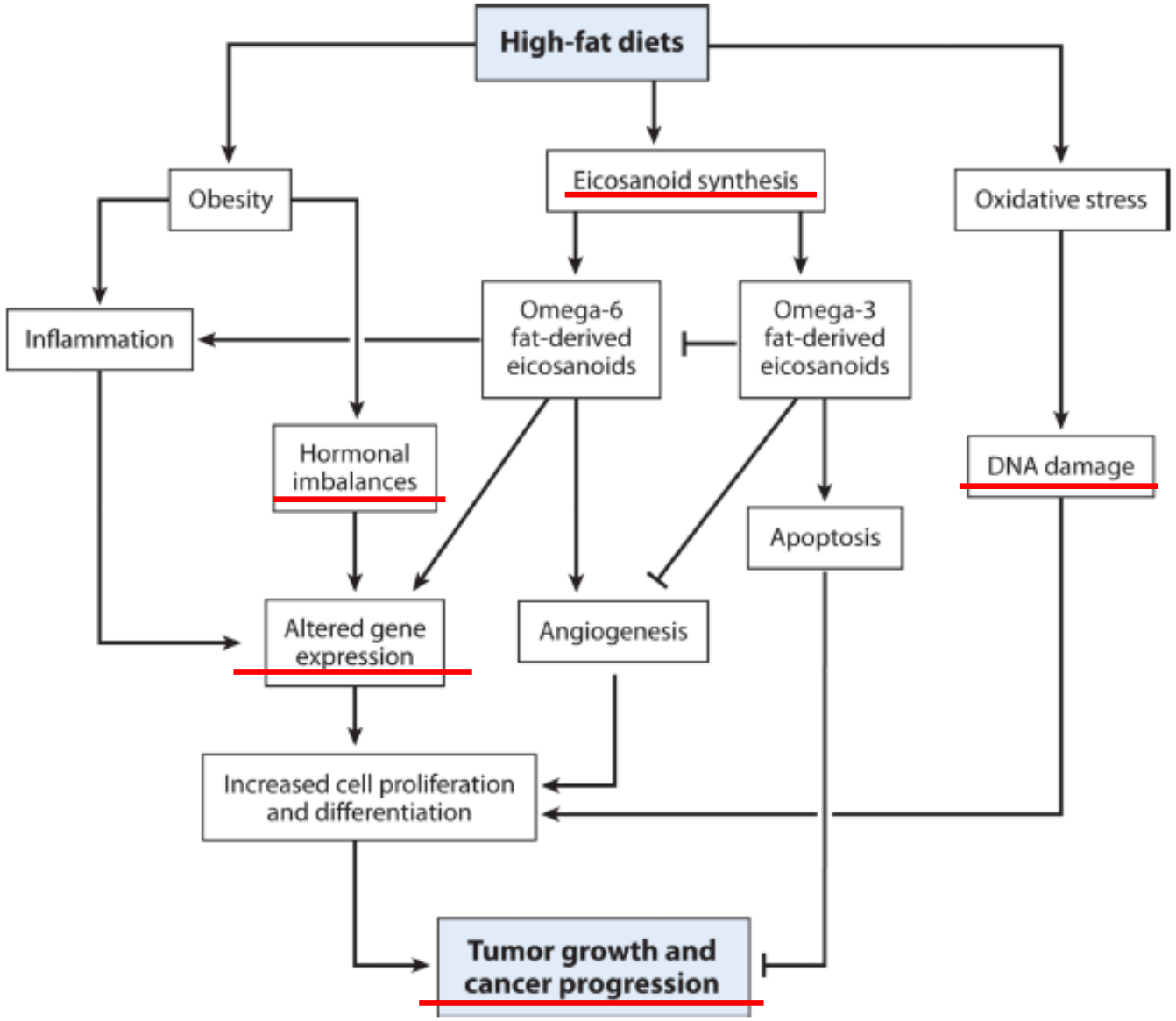
Table 5 Dietary changes between baseline and 6 months

	Baseline	6 months	Change	*P* value[a]
Calories				0.045
Intervention	1779.3 (92.2)	1578.3 (85.6)	− 195.5 (83.0)	
Control	1765.8 (85.0)	1805.3 (79.0)	+ 34.8 (76.6)	

Table 4 Comparison of mediterranean diet and spices and herbs scores between intervention and control

	Baseline	6 months	Change	*P* value[a]
Mediterranean diet score				< 0.001
Intervention	7.1 (0.3)	8.7 (0.3)	+ 1.6 (0.2)	
Control	7.4 (0.3)	7.6 (0.3)	+ 0.2 (0.2)	
Spices and herbs score				< 0.001
Intervention	1.3 (0.2)	3.2 (0.3)	+ 1.9 (0.3)	
Control	1.2 (0.1)	1.6 (0.3)	+ 0.4 (0.2)	

ASSOCIATION BETWEEN DIETARY FATS AND BREAST CANCER



Annu Rev Nutr. 2013 ; 33: . doi:10.1146/annurev-nutr-112912-095300.

Dietary Fat in Breast Cancer Survival

ω-3 and ω-6 Polyunsaturated Fatty Acid Intakes and the Risk of Breast Cancer in Mexican Women: Impact of Obesity Status

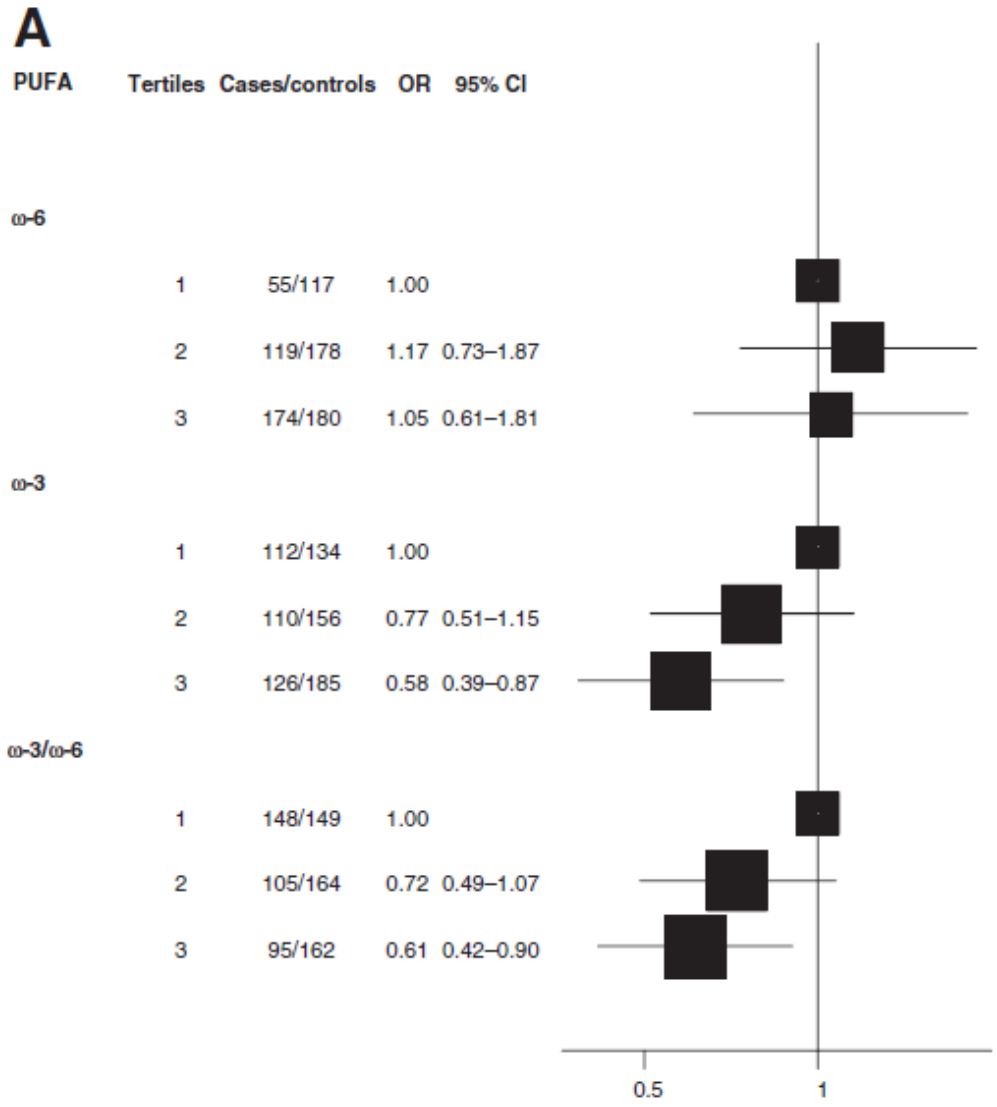
Véronique Chajès[1], Gabriela Torres-Mejía[2], Carine Biessy[1], Carolina Ortega-Olvera[2], Angélica Angeles-Llerenas[2], Pietro Ferrari[1], Eduardo Lazcano-Ponce[2], and Isabelle Romieu[1]

Cancer Epidemiol Biomarkers Prev; 21(2); 319–26. ©2011

Effect of omega-3 PUFAs on breast cancer risk according to BMI tertiles

Associations between PUFA intake and breast cancer risk stratified by BMI:

- A **decreased risk of breast cancer** was significantly associated with **increasing omega-3 PUFA intake** in **obese women**
- but not in normal weight women



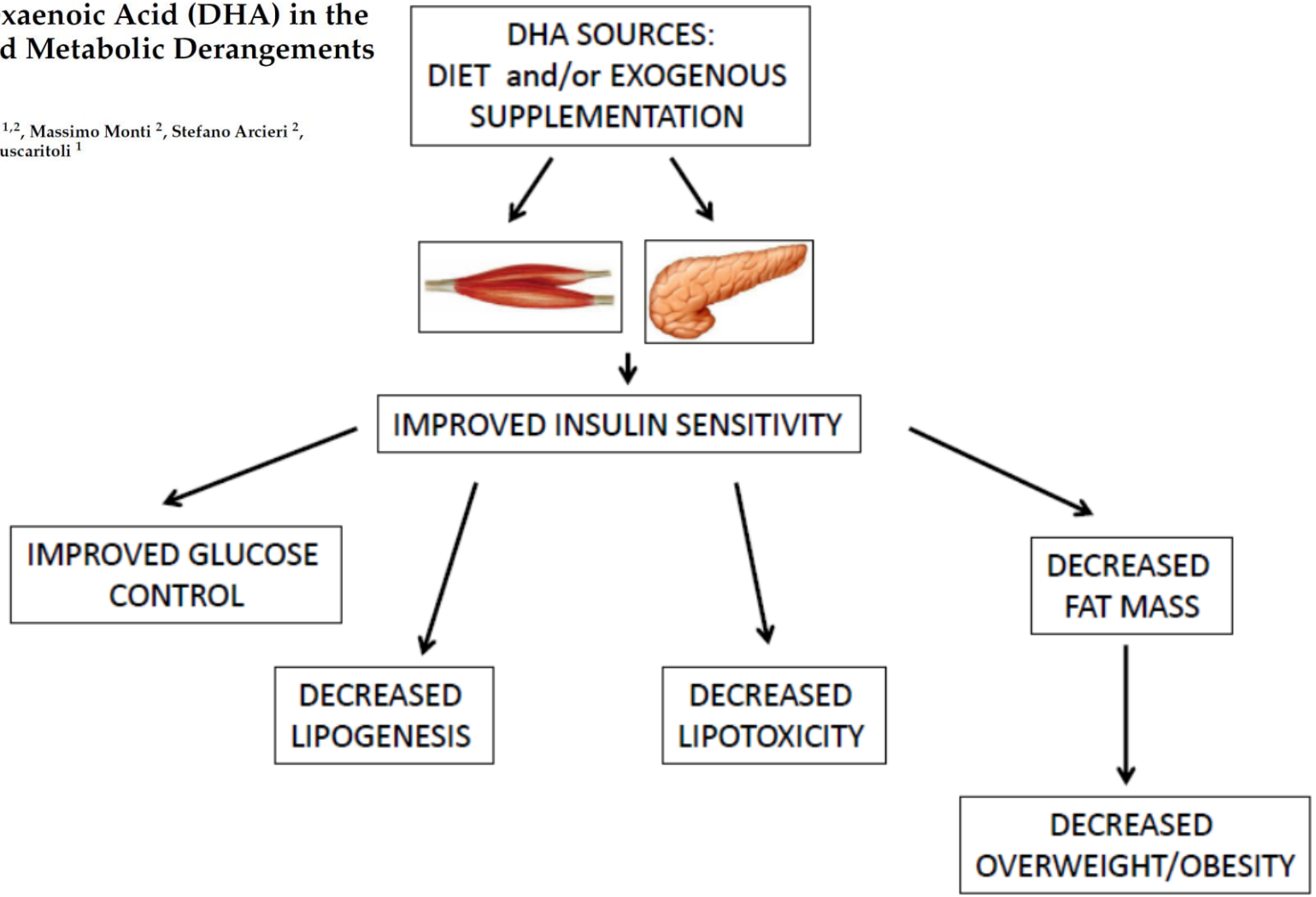
International Journal of *Molecular Sciences*

DHA AMELIORATES OBESITY

Review

The Role of Docosahexaenoic Acid (DHA) in the Control of Obesity and Metabolic Derangements in Breast Cancer

Alessio Molfino [1,*], Maria Ida Amabile [1,2], Massimo Monti [2], Stefano Arcieri [2], Filippo Rossi Fanelli [1] and Maurizio Muscaritoli [1]



Molfino A, et al. Int J Mol Sci, 2016

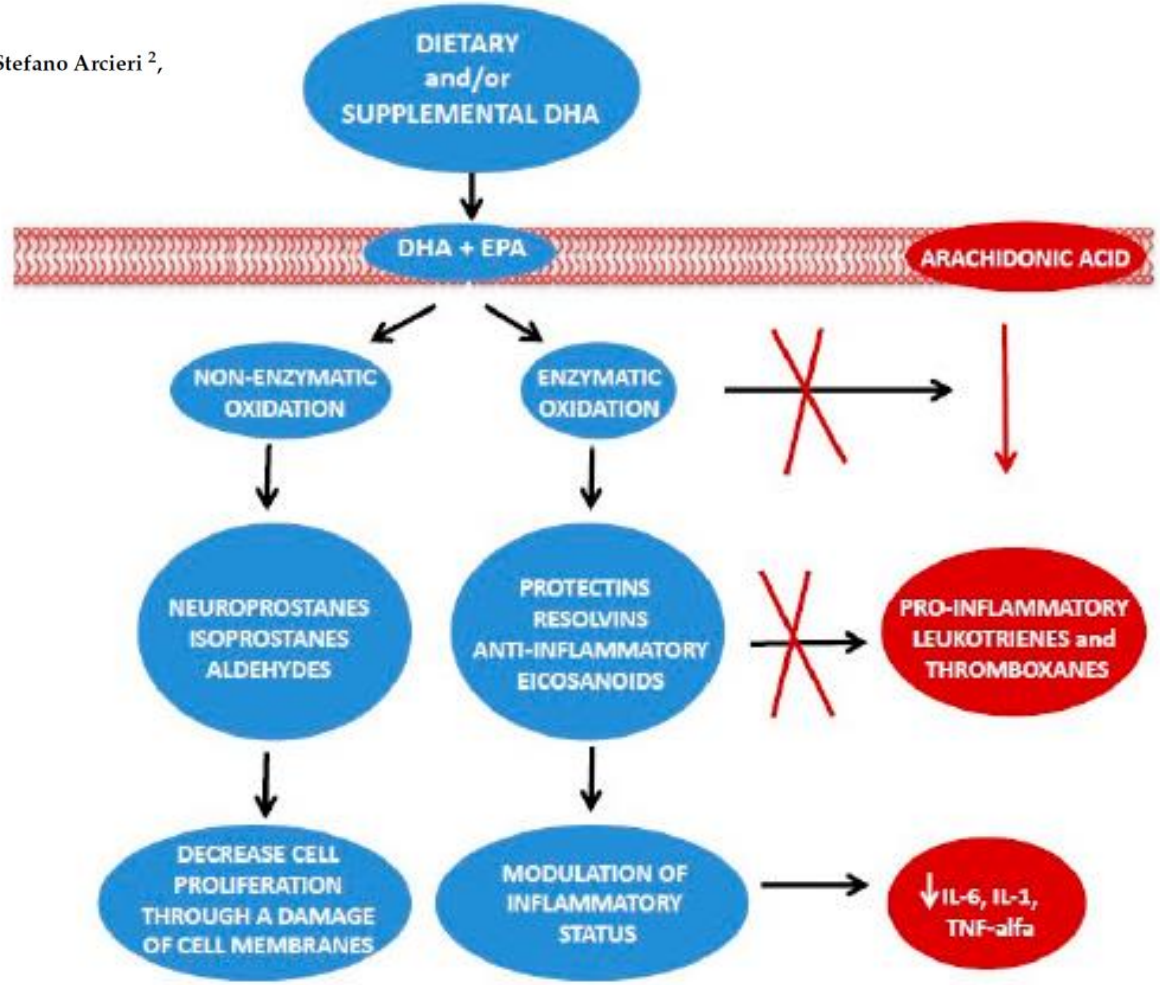
International Journal of
Molecular Sciences

Review

The Role of Docosahexaenoic Acid (DHA) in the Control of Obesity and Metabolic Derangements in Breast Cancer

Alessio Molfino [1,*], Maria Ida Amabile [1,2], Massimo Monti [2], Stefano Arcieri [2], Filippo Rossi Fanelli [1] and Maurizio Muscaritoli [1]

ENZYMATIC WAY AND NON-ENZYMATIC WAY FOR ω-3 PUFAS



Molfino A, et al. Int J Mol Sci, 2016

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Valutazione degli effetti della supplementazione di acido docosaesaenoico (DHA) sul profilo metabolico lipidico in donne affette da neoplasia mammaria e sottoposte a chirurgia mammaria

frontiers in Physiology

ORIGINAL RESEARCH
published: 28 July 2017
doi: 10.3389/fphys.2017.00549

Check for updates

Effect of Oral Docosahexaenoic Acid (DHA) Supplementation on DHA Levels and Omega-3 Index in Red Blood Cell Membranes of Breast Cancer Patients

*Alessio Molfino[1], Maria I. Amabile[1,2], Sara Mazzucco[3], Gianni Biolo[3], Alessio Farcomeni[4], Cesarina Ramaccini[1], Simonetta Antonaroli[5], Massimo Monti[2] and Maurizio Muscaritoli[1]**

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DHA supplementation was associated with **increased DHA levels** and **omega-3 index** in RBC membranes of BC cancer patients, independent of the type of BC presentation, and in controls.

BRCA1/2 mutation, as well as **low seafood consuming habits** in both BC patients and healthy controls, seem to be **associated with greater ability of DHA incorporation**.

TABLE 2 | DHA levels, EPA levels, and omega-3 index in RBC membranes in the four groups of participants at baseline (T0) and after DHA supplementation (T1).

All participants (*N* = 43)	T0, Mean ± SD	T1, Mean ± SD	*P*
S GROUP (*N* = 10)			
DHA	6.14 ± 1.21	7.54 ± 0.97	0.002
EPA	0.53 ± 0.23	0.68 ± 0.22	0.014
Omega-3 Index	6.67 ± 1.33	8.21 ± 1.08	0.002
F GROUP (*N* = 12)			
DHA	6.09 ± 1.11	7.35 ± 1.12	0.003
EPA	0.62 ± 0.27	0.77 ± 0.33	0.004
Omega-3 Index	6.71 ± 1.32	8.12 ± 1.35	<0.001
M GROUP (*N* = 11)			
DHA	5.86 ± 1.51	7.4 ± 1.32	<0.001
EPA	0.60 ± 0.34	0.7 ± 0.27	0.018
Omega-3 Index	6.43 ± 1.75	8.1 ± 1.53	<0.001
C GROUP (*N* = 10)			
DHA	6.1 ± 0.88	7.23 ± 0.7	0.006
EPA	0.52 ± 0.11	0.6 ± 0.1	0.004
Omega-3 Index	6.62 ± 0.9	7.0 ± 0.74	0.002

TABLE 3 | Multivariate regression models to predict variation of DHA levels in RBC membranes between baseline (T0) and after DHA supplementation (T1).

Clinical characteristics	Beta coefficient (95% CI)	*P*
TYPE OF BC PRESENTATION		
S group vs. C group	0.12 (−0.21, 0.44)	0.47
F group vs. C group	0.21 (−0.13, 0.55)	0.21
M group vs. C group	0.30 (0.05, 0.55)	0.02
DIETARY SEAFOOD HABITS		
Good vs. Low seafood consumer	−0.49 (−0.68, −0.30)	<0.001

DHA, docosahexaenoic acid; RBC, red blood cell; BC, breast cancer; S group, sporadic group; F group, familiar group; M group, mutated group; C group, controls.

Effect of Oral Docosahexaenoic Acid (DHA) Supplementation on DHA Levels and Omega-3 Index in Red Blood Cell Membranes of Breast Cancer Patients

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A role for omega-3 fatty acid metabolites?

- Experimental studies have documented that specific epoxydocosapentaenoic acids (EDPs) - in particular 19,20-EDPs - are potent mediators in suppressing inflammation and inhibiting angiogenesis, endothelial cell migration, endothelial cell proliferation, and the growth and metastasis of human breast and prostate cancer

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Research Article

DHA Oral Supplementation Modulates Serum Epoxydocosapentaenoic Acid (EDP) Levels in Breast Cancer Patients

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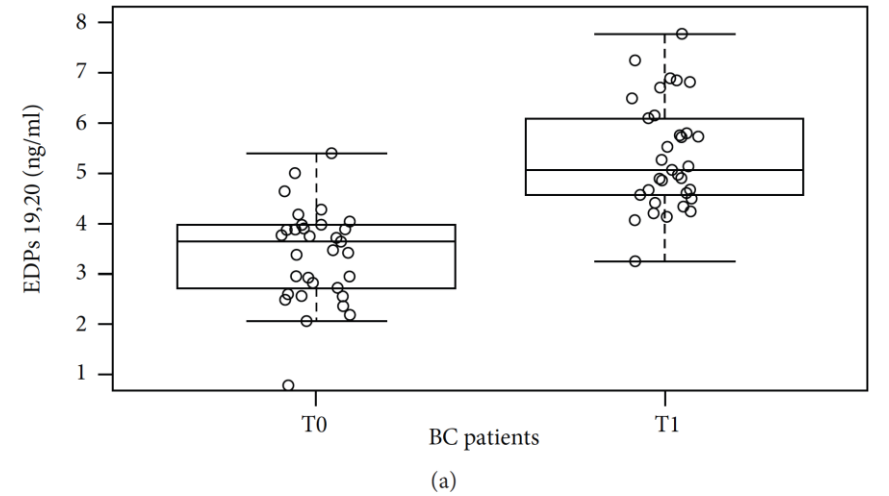
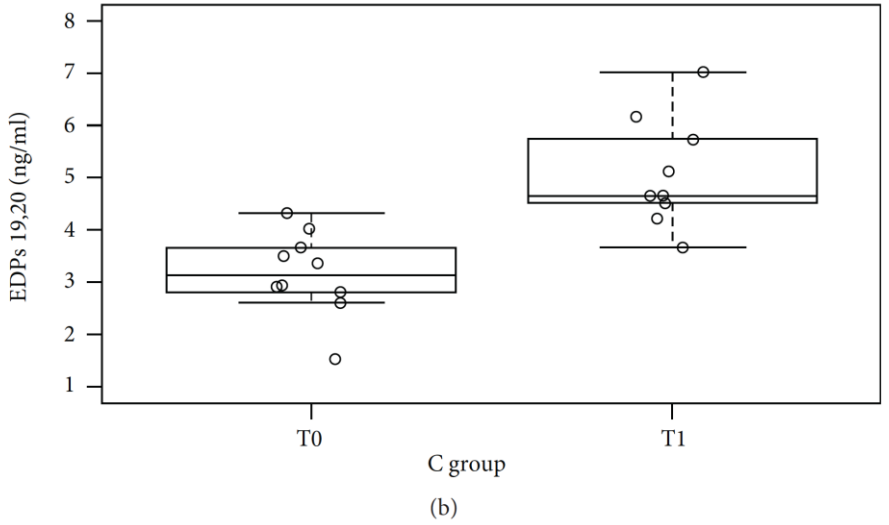
Effect of oral DHA on 19,20EDP in BC patients





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DHA oral supplementation was associated with increased 19,20-EDP serum levels in BC patients, independent of the type of BC presentation.

19,20-EDP levels were higher at T1 with respect to T0 ($P < 0\ 001$)

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Conclusioni

- In Italia, il tributo pagato ogni anno al tumore mammario femminile è ancora molto elevato, anche se la sopravvivenza a 5 anni è in miglioramento
- Abitudini alimentari e stili di vita scorretti, sovrappeso, obesità rappresentano fattori di aumentato rischio di ammalarsi di tumore mammario
- Quantità e qualità dei grassi alimentari hanno rilevanza sia nella prevenzione che nel trattamento del tumore mammario
- La composizione corporea influenza la sopravvivenza e la risposta ai trattamenti nelle donne con tumore mammario e deve entrare a fare parte della valutazione multidimensionale e multidisciplinare
- Studi prospettici e su ampie casistiche sono necessari per confermare le associazioni tra massa magra, massa grassa e prognosi di malattia