Table 1: Clinical trials of L-carnitine, acetyl-L-carnitine and propionyl-L-carnitine for cancer

Source: Peter Renner, Markus Horneber, CAM-Cancer Consortium. L-Carnitine, [online document], January 2015

Author	Study design	Participants	Treatment	Outcomes	Results	Risk of bias
Cruciani 2012 (35)	Randomized, two arms, parallel, blinded, placebo control, four weeks' follow-up	326 patients with invasive malignancies and moderate to severe fatigue	Intervention: LC 1g/day (oral liquid) twice daily for 4 weeks Control: placebo	CrF (BFI/FACIT-F) Pain (BPI) Depression (CES-D)	CrF unchanged Pain unchanged Depression unchanged	low
Kraft 2012 (36)	Randomized, two arms, parallel, blinded, placebo control, 12 weeks follow-up	72 patients with advanced pancreatic cancer	Intervention: LC 4g/day orally for 12 weeks Control: placebo	BMI Nutritional status QoL CrF	BMI increased Nutritional status increased Cognitive function (subgroup of QoL) CrF unchanged	moderate
Cruciani 2009 (37)	Randomized, two arms, parallel, blinded, placebo control, two weeks follow-up	29 patients with various advanced malignancies (stage unclear), moderate to severe CrF, low plasma carnitine levels and low PS	Intervention: LC 0.5g/day for two days, then 1g for two days, then 2g for 10 days Control: placebo	CrF PS	CrF unchanged(blinded phase) PS unchanged (blinded phase)	moderate
Hershman 2013 (38)	Randomized, two arms, parallel, blinded, placebo control, 24 weeks follow-up	409 women with breast cancer undergoing adjuvant taxane-based chemotherapy	Intervention: ALC 3g/day for 24 weeks Control: placebo	CIPN (FACT-NTX) Functional status (FACT-TOI) CrF (FACIT-F)	CIPN was significantly increased after 24 weeks Functional status increased CrF unchanged	low
Cruciani 2006 (33)	Quasi-experimental (phase I/II), uncontrolled, pre-post test, one week follow-up	27 patients with various advanced malignancies (stage unclear) and low plasma carnitine levels, no concurrent chemo-/radiotherapy	Intervention: LC, starting dose: 250mg/day, incre-ments of500mg to a maximum target dose of 3g/day	CrF Depression QoS PS	CrF decreased Depression decreased QoS increased PS unchanged	high

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Gramignano 2006 (32)	Quasi-experimental, uncontrolled, pre-post test, four weeks follow-up	12 patients with various advanced solid tumours (92% stage IV) and CrF and/or high levels of reactive oxygen species during different chemotherapies	Intervention: LC, 6g/day for four weeks	CrF QoL Nutritional status	CrF decreased QoL increased Lean body mass increased Appetite increased	high
Graziano 2002 (34)	Quasi-experimental, uncontrolled, pre-post test, three weeks follow-up	50 patients with stage IV solid tumours and low plasma carnitine levels during cisplatinum- or ifosfamide-based chemotherapies	Intervention: LC, 4g/day for seven days	CrF	CrF decreased	high
Cavallini 2005 (39)	Randomized, three arms, parallel, blinded, placebo control, four months follow-up	96 men with erectile dysfunction after bilateral nerve-sparing radical retropubicprostatectomy for prostate cancer at least six months ago	Intervention: (1) Sildenafil 100mg (when needed); (2) Sildenafil 100mg + ALC 2g/day and PLC 2g/day (when needed) Control: placebo	IIEF Self report of satisfactory SI	IIEF increased SI increased	moderate
Bianchi 2005 (41)	Quasi-experimental, uncontrolled, pre-post test, eight weeks follow-up	25 patients with various cancers (stages unclear) during paclitaxel or cisplatinum chemotherapy and chemotherapy-induced polyneuropathy (CIPN) grade II/III	Intervention: ALC 1g/day twice daily for eight weeks	Neurotoxicity (NCI-CTC scale) SA and CV TNS	Sensory and motor neuropathy improved (NCI-CTC scale) SA and CV increased TNS improved	low (NCI-CTC, SA, CV) to moderate (TNS)
Maestri 2005 (42)	Quasi-experimental, uncontrolled, pre-post test, median follow-up two weeks	27 patients with various cancers (stages unclear) and grade I-II paclitaxel- and/or cisplatinum-induced CIPN (WHO)	Intervention: ALC 1g/dosedaily intravenous infusion for one to two hours for at least 10days	CIPN severity (WHO-Toxicity Grading List)	CIPN severity improved	high
unpublished/ mentioned in (43)	Randomized, two arms, parallel, blinded, placebo control, two months follow-up	119 patients with various cancer, treated with paclitaxel-based chemotherapies	Intervention: ALC (no further description) Control: placebo	CIPN	"*Vibratory sensation*" improved	moderate

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Waldner 2006 (44)	Randomized, two arms, parallel, blinded, placebo control, 18 weeks follow-up	40 patients with different non-Hodgkin lymphoma	Intervention: LC 3g before each chemotherapy cycle followed by 1g/d during the following 21days for six cycles Control: placebo	ECG Survival QoL	ECG no differences Survival no differences QoL no differences	moderate
Lissoni 1993 (45)	Randomized, two arms, parallel, no-treatment control, 18 weeks follow-up	30 patients with various metastatic cancers and concomitant heart diseases during high-dose interleukin-2 therapy	Intervention: LC 1g/d orally Control: no treatment	Cardiac symptoms/ ECG Other	Fewer cardiac complications	high

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