

## **Fasting in mood disorders: neurobiology and effectiveness. A review of the literature.**

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Study	Fasting protocol	Study design and population	Mood evaluation	Major findings
Teng 2011	Three months clinical trial on CR (reduction of 300 to 500 kcal/day) combined with two days/week of MF.	Randomized controlled trial Healthy individuals N=25	BDI- II QOL Pittsburgh Sleep Quality Index Perceived Stress Scale	significant energy increase in QOL questionnaire ( $P < 0.05$ ). No significant changes in depression and stress level, but baseline levels were very low. No change in sleep quality.
Farooq 2010	MF during Ramadan	Open-labelled bipolar affective disorder N=62	HDRS YMRS	significant decrease in HDRS and YMRS during Ramadan ( $F=34.12$ , $P < 0.01$ , for HDRS and $F=15.6$ , $P < 0.001$ for YMRS)
Michalsen 2009	8-day modified medical fasting treatment (total energy intake $< 350$ kcal/d)	Controlled Healthy subjects N=108	Daily ratings of mood (VAS)	Significant mood improvement ( $p=0.036$ )
Tavakkoli 2008	MF during Ramadan	Controlled trial with irritable bowel syndrome N=60	HADS QOL	Decrease of anxiety score (from 12.7 (6.0) to 9.8 (4.4) after fasting ( $p=0.026$ ))
Lepage 2008	CR based on patient's self-declaration	Observational study Female with CR vs non-CR N=486	CES-D BSI	Significant group differences on the BSI, $F(3, 289) = 4.84$ , $p < .005$ , while results for the CES-D neared significance, $F(3, 309) = 3.03$ , $p = .03$ .
Kanazawa 2006	Complete fasting during 10 days	Controlled trial Irritable Bowel Syndrome N=58	Clinical interview	Fasting significantly improved anorexia ( $p = .02$ ) and anxiety ( $p < .001$ ), and interference with life in general ( $p < .001$ ).

Michalsen 2006	8-day modified fast (300 kcal/day)	Controlled trial Chronic Pain Syndromes N=36	Daily ratings of mood (VAS)	Mood ratings increased significantly in the late phase of fasting (P < 0.01) but were not related to weight-loss, leptin- depletion or cortisol increase.
Suzuki 1976	Complete fasting during 10 days	Observation study Depression N=36	Clinical interview	Reported remission rate of 86%

Table 1. Clinical studies evaluating mood in populations under fasting condition. BDI : Beck Depression Inventory. HDRS : Hamilton Depression Rating Scale . HADS : Hospitalisation Anxiety and Depression Scale. YMRS : Young Mania Rating Scale. CES-D : Center for Epidemiological Studies- Depression Scale. QOL : quality of life. CR : caloric restriction. MF : Muslim fasting. BSI Brief Symptom Inventory. VAS : Visual Analogue Scale.