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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 ($p < .001$). |

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|-------------------|---------------------------------------|---|--------------------------------|---|
| 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.