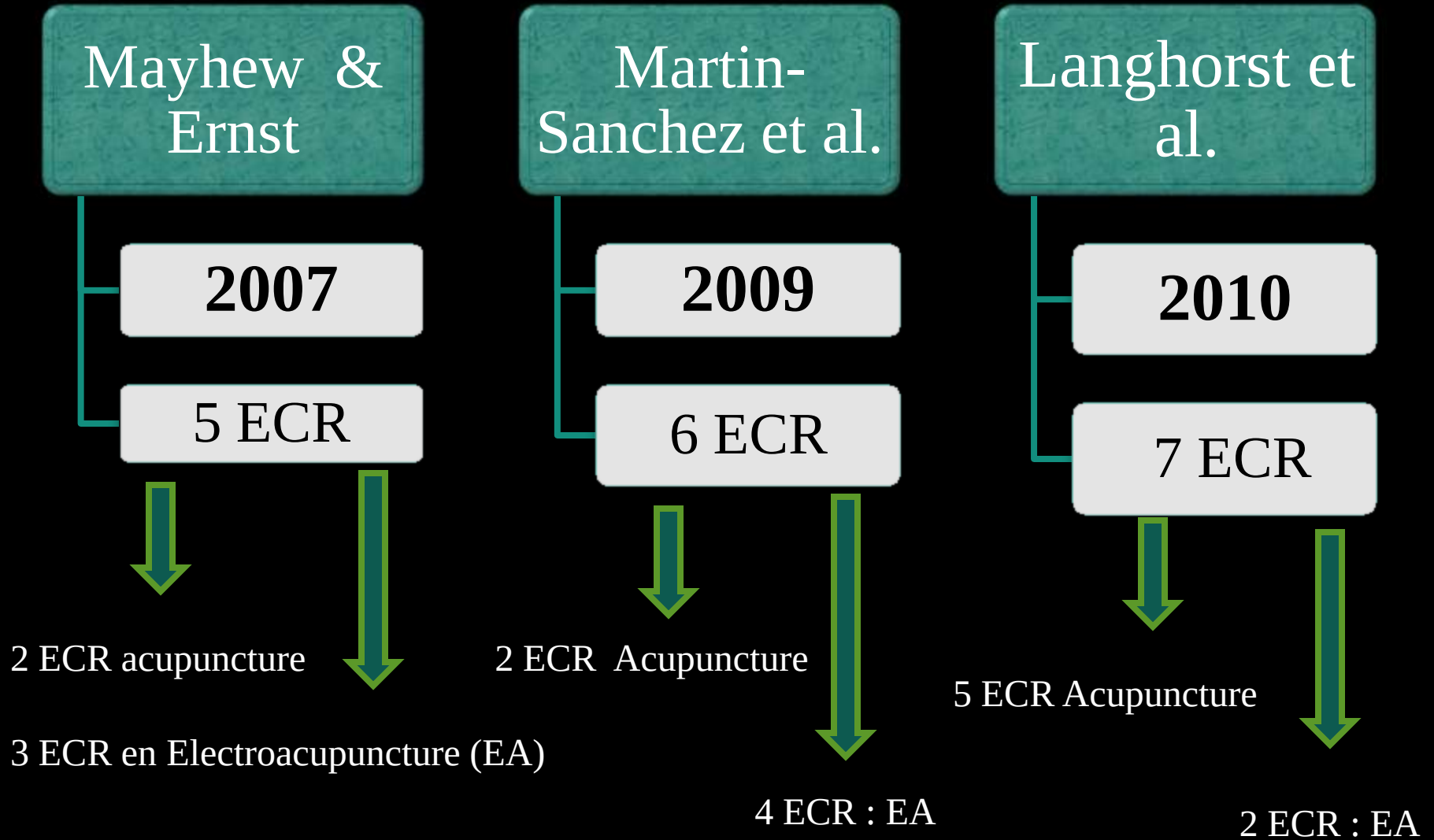


Fibromyalgies et Acupuncture : état des lieux

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Revue systématique et méta-analyse



Mayhew & Ernst

Source	Study design Jadad score*	Treatment group(s)
Martin <i>et al.</i> [9]	Single-blind, placebo-controlled RCT <i>n</i> = 50 fibromyalgia patients ACR classification criteria ^a 3	Traditional Chinese acupuncture (with EA) <i>n</i> = 25 Six sessions (2–4 × week)
Assefi <i>et al.</i> [10]	Single-blind, placebo-controlled RCT <i>n</i> = 100 fibromyalgia patients ACR classification criteria 3	Traditional Chinese acupuncture <i>n</i> = 25 24 sessions (2 × week)
Guo and Jia [11]	RCT <i>n</i> = 66 fibromyalgia patients ACR classification criteria 1	EA (A) <i>n</i> = 22 Dermal neurological electrical stimulation (B) <i>n</i> = 22 40 sessions (1 × day with 4 day break after 20 sessions)
Sprott [12]	RCT <i>n</i> = 30 ACR classification criteria 1	Traditional Chinese acupuncture Six sessions (2 × week) <i>n</i> = 10
Delzue <i>et al.</i> [8]	Single-blind, placebo-controlled RCT <i>n</i> = 70 fibromyalgia patients ACR classification criteria 3	EA <i>n</i> = 36 Six sessions (2 × week)

- Critères d'inclusion ACR
- 2 ECR jadam 1/5
- 3 ECR à Jadad 3/5
- Faible population
- Amélioration à court terme surtout de la douleur versus groupe sham uniquement dans les ECR en EA

Acupuncture non recommandée dans la fibromyalgie

Martin-Sanchez et al.

Study	N (Women)		Intervention	
	Active Group	Sham Group	Technique	Treatment
Lautenschlager, 1989	17 (17)	20 (18)	- Electroacupuncture vs placebo treatments with a disconnected laser equipment	6 treatments
Deluze, 1992	36 (33)	34 (21)	- 4-10 stainless steel needles (0.3-22 mm). Depth: 10-25 mm - Electrostimulator (5 pairs of electrodes). 1-99 Hz (frequency), 10 mA (max. intensity). - Electrostimulation in common acupuncture points vs electrostimulation 20 mm away from these points.	6 sessions (2 sessions during 3 w)
Sprott, 1998a	10	10	- Acupuncture points according to the rules and nomenclature of Traditional Chinese Medicine - Acupuncture treatments vs sham treatments (disconnected laser equipment)	6 treatments (2 treatments / w during 3 w)
Assefi, 2005	25 (22)	71 (69)	- Directed acupuncture according to the practice of Traditional Chinese Medicine vs 1 of 3 sham acupuncture treatments: acupuncture for an unrelated condition, needle insertion at nonacupoint locations, or noninsertive simulated acupuncture. - Time of needle insertion (30-40 gauge): 30 min./acupoint	2 treatment / w during 12 w
Harris, 2005	29 (29)	28 (24)	- Sterile, 2.54 cm, single-use, disposable, 38-gauge stainless steel needles - Manual stimulation in traditional needle locations vs manual stimulation in non traditional needle locations	- 3w: 1 treatment / w - 3w: 2 treatment / w - 3w: 3 treatment / w 2w washout period between each treatment dose
Martin, 2006	25 (25)	25 (24)	- 18 needle during the first 3 sessions and 20 needles during the final 3 sessions - Electrical stimulation (frequency: 1-10 Hz) in traditional points vs sham stimulation with modified acupuncture needle that looks identical to the acupuncture treatment	6 treatment sessions (1 treatment / 2 to 4 days during 2 to 3 w)

- Critères d'inclusion ACR
- Méta-analyse réalisée sur 4 ECR à jasad ≥ 3
- Faible population

Pas d'effet bénéfique dans la douleur de la fibromyalgie

Martin-Sanchez et al.

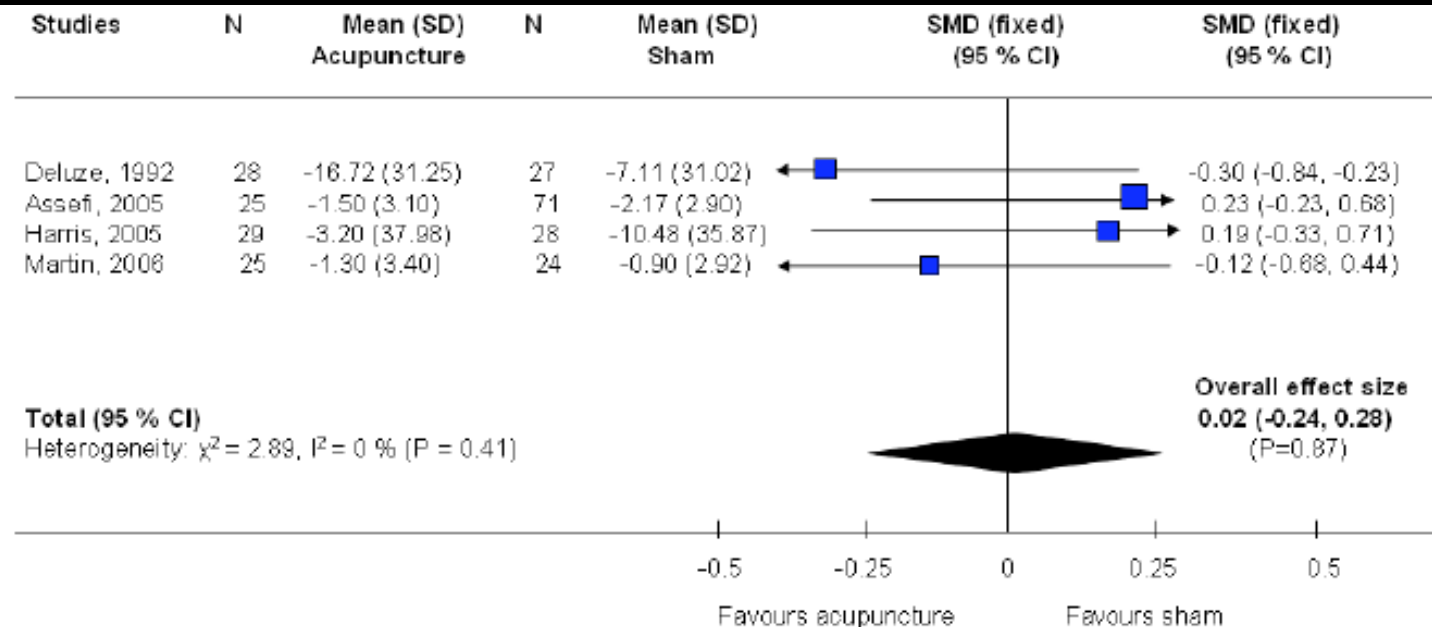


Fig. (2A). Meta-analysis of efficacy: intensity of pain by visual analogue scale (VAS). *SD*: standard deviation; *CI*: confidence interval; *SMD*: standardized mean differences; *P*: p-value.

Langhorst et al.

Ref.; setting; referral	Outcome measures used for meta-analysis; follow-up; methodological quality (van Tulder score)
Assefi <i>et al.</i> [28]; US private acupuncture offices; advertisement, local self-help groups and doctors	Pain VAS 0–10 ^a ; fatigue VAS 0–10 ^a ; sleep VAS 0–10 ^a ; depressed mood function SF-36 physical summary score; 12 and 24 weeks; 8
Deluze <i>et al.</i> [29]; Switzerland University Hospital, Division of Physical Therapy; NR	Pain VAS 0–100; fatigue NA; sleep VAS 0–100; depressed mood NA; physical function NA; No; 7
Harris <i>et al.</i> [30]; USA, University Rheumatology Department; newspaper advertisement	Pain VAS 0–10; fatigue MFI; sleep NA; depressed mood NA; function SF-36 Physical Summary Score; no; 9
Harris <i>et al.</i> [31]; USA, Rheumatology Department; NR	Pain MPQ Total ^a ; fatigue NA; sleep NA; depressed mood NA; HRQOL NA; no; 8
Lautenschläger <i>et al.</i> [32]; Switzerland University, Rheumatology Department; NR	Pain VAS 0–10; fatigue NA; sleep NA; depressed mood NA; HRQOL NA; 12 weeks, no details suited for meta-analysis presented; 4
Martin <i>et al.</i> [33]; USA, University Pain Department; Physicians	Pain VAS 0–10; fatigue VAS 0–10; sleep NA; depressed mood VAS 0–10; function FIQ Physical Impairment; 4 and 28 weeks; 7
Sprott [34]; Germany, University Internal department; NR	Pain VAS 0–10 ^b ; fatigue NA; sleep NA; depressed mood; HRQOL NA; 8 weeks ^b ; 3

- Méta-analyse réalisée sur 7 ECR (N=385) score de Van Tulder (3 ECR haute qualité >7/11) ; 2 moyenne qualité ; 2 de basse qualité ≤4)
- 1 ECR de plus

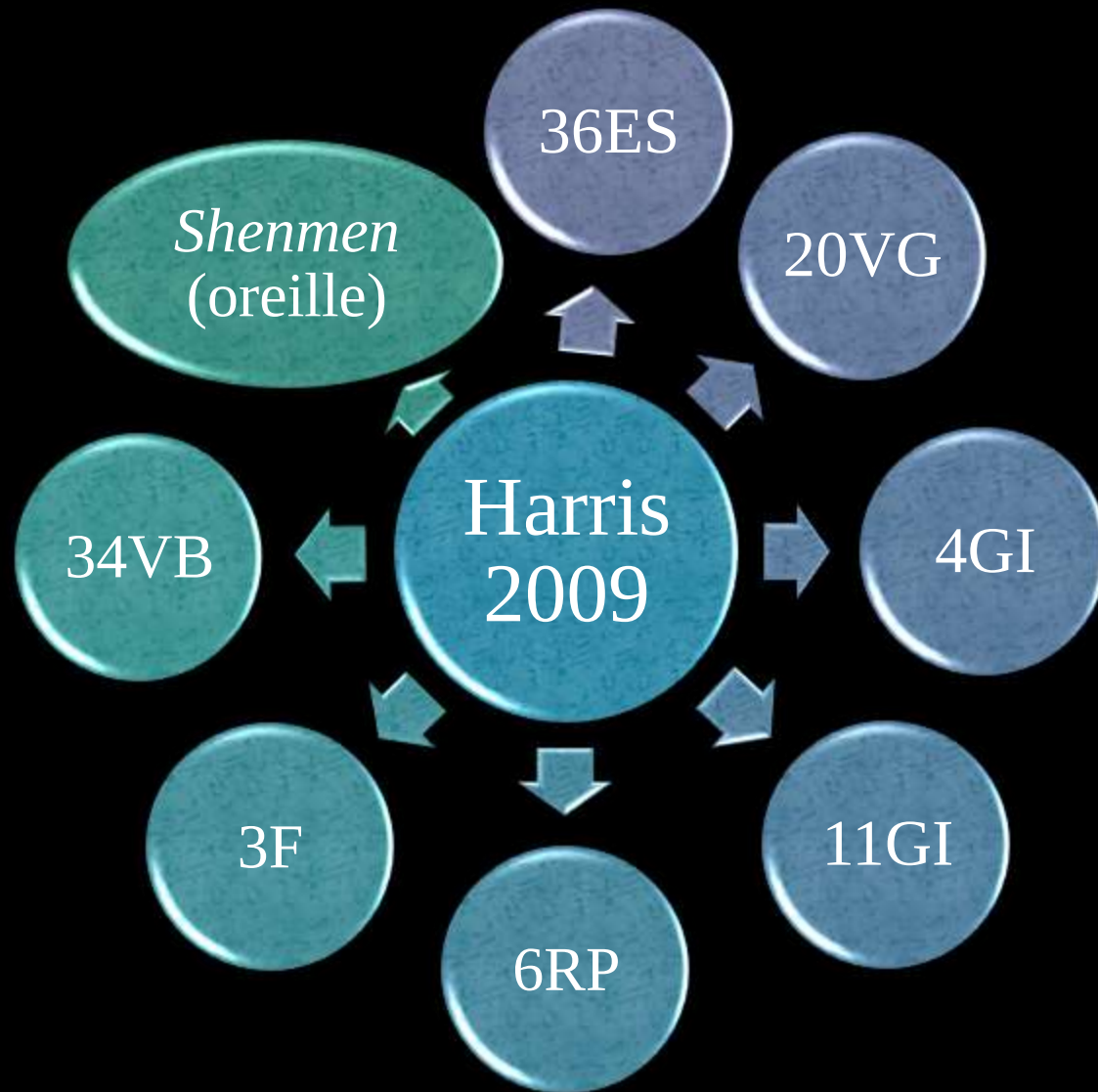


Acupuncture non recommandée en traitement unique

MAIS en post traitement

- réduction significative des douleurs (p=0,04)
- pas de réduction de la fatigue et des troubles du sommeil
- pas d'amélioration physique

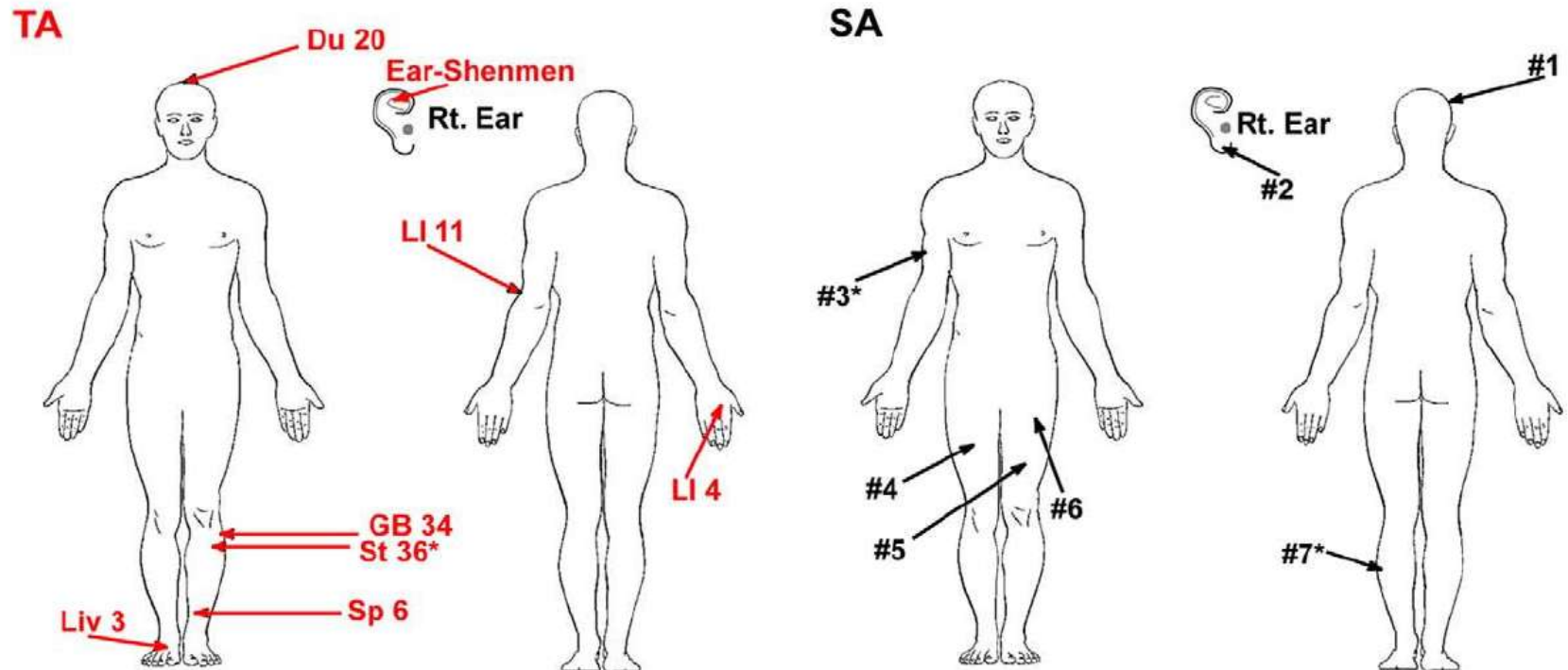
AUCUNE amélioration en suivi tardif (à 26 semaines)



Groupe Acupuncture : manuelle 50 mn avec recherche du *deqi* : 2 séances pendant 4 semaines

Groupe placebo (sham) : sensation de piqûre sans pénétration d'aiguilles sur non-points

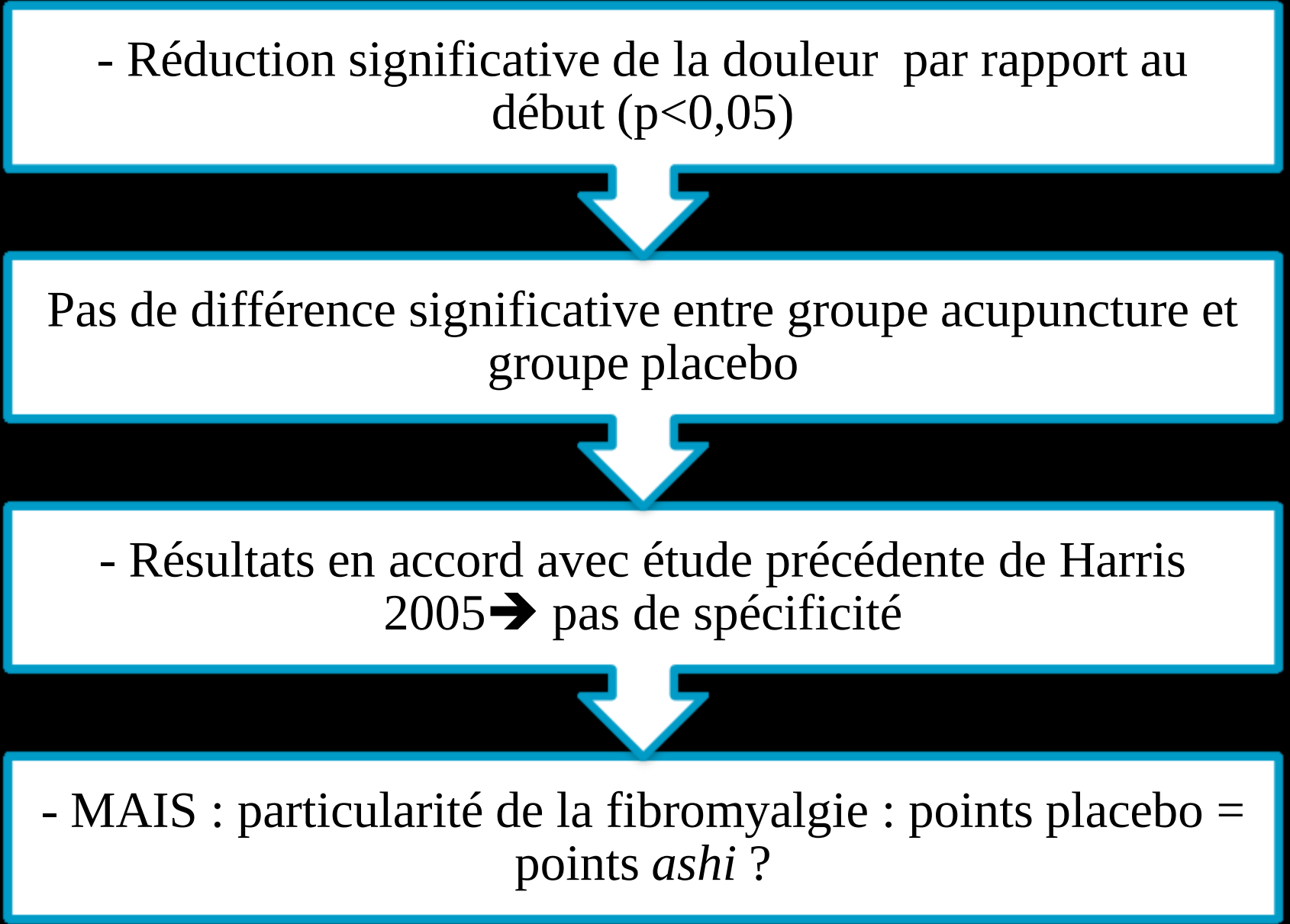
Harris RE et al. Neuroimage. 2009



Groupe TA : acupuncture véritable

Groupe SA : groupe placebo « sham » avec simulation de piqûre avec cure-dents et tube-guide selon technique de Sherman

- Réduction significative de la douleur par rapport au début ($p < 0,05$)



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graph TD; A["- Réduction significative de la douleur par rapport au début (p < 0,05)"] --> B["Pas de différence significative entre groupe acupuncture et groupe placebo"]; B --> C["- Résultats en accord avec étude précédente de Harris 2005 → pas de spécificité"]; C --> D["- MAIS : particularité de la fibromyalgie : points placebo = points ashi ?"]
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Pas de différence significative entre groupe acupuncture et groupe placebo

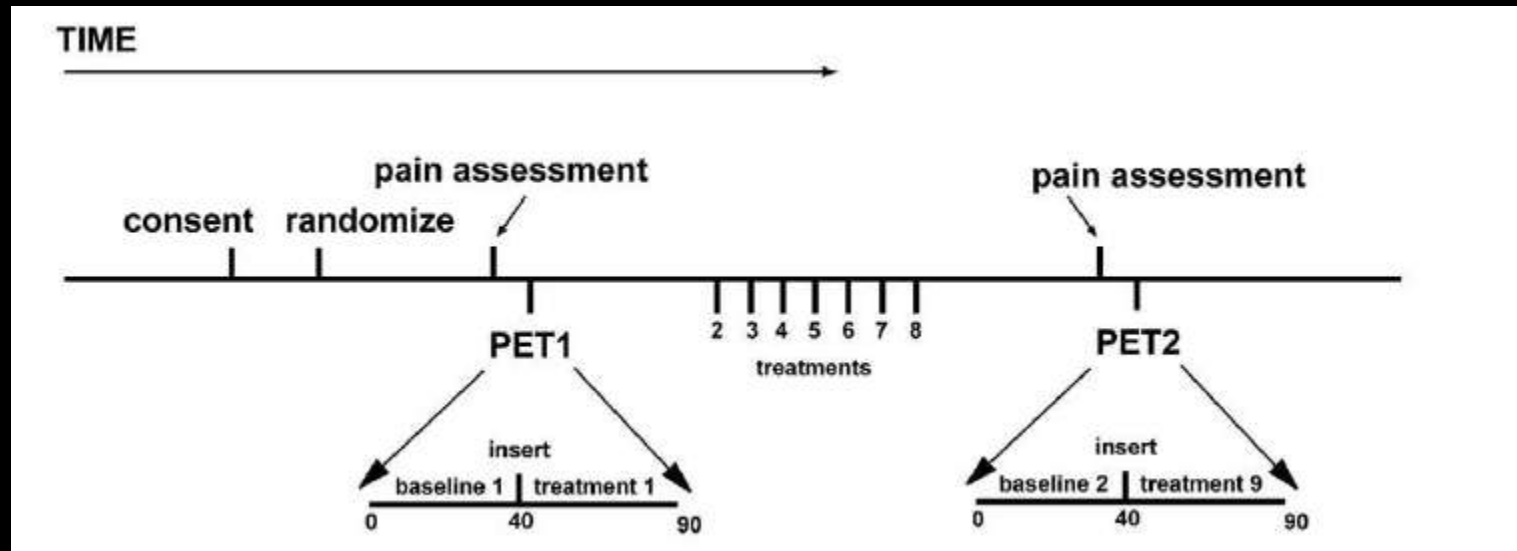
- Résultats en accord avec étude précédente de Harris 2005 → pas de spécificité

- MAIS : particularité de la fibromyalgie : points placebo = points *ashi* ?

Mécanismes physiopathologiques

Action sur les endorphines

Différence entre acupuncture placebo et acupuncture réelle dans la fibromyalgie



Tomographie par émission de positrons (TEP) dès première séance et 1 mois après



Comparaison de l'imagerie par rapport aux conditions basales

Différence entre acupuncture placebo et acupuncture réelle dans la fibromyalgie

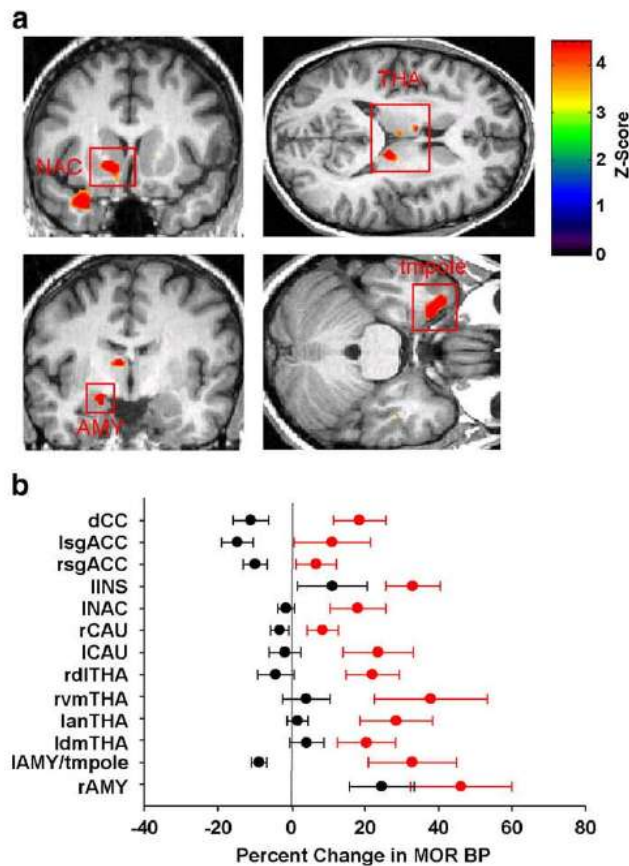
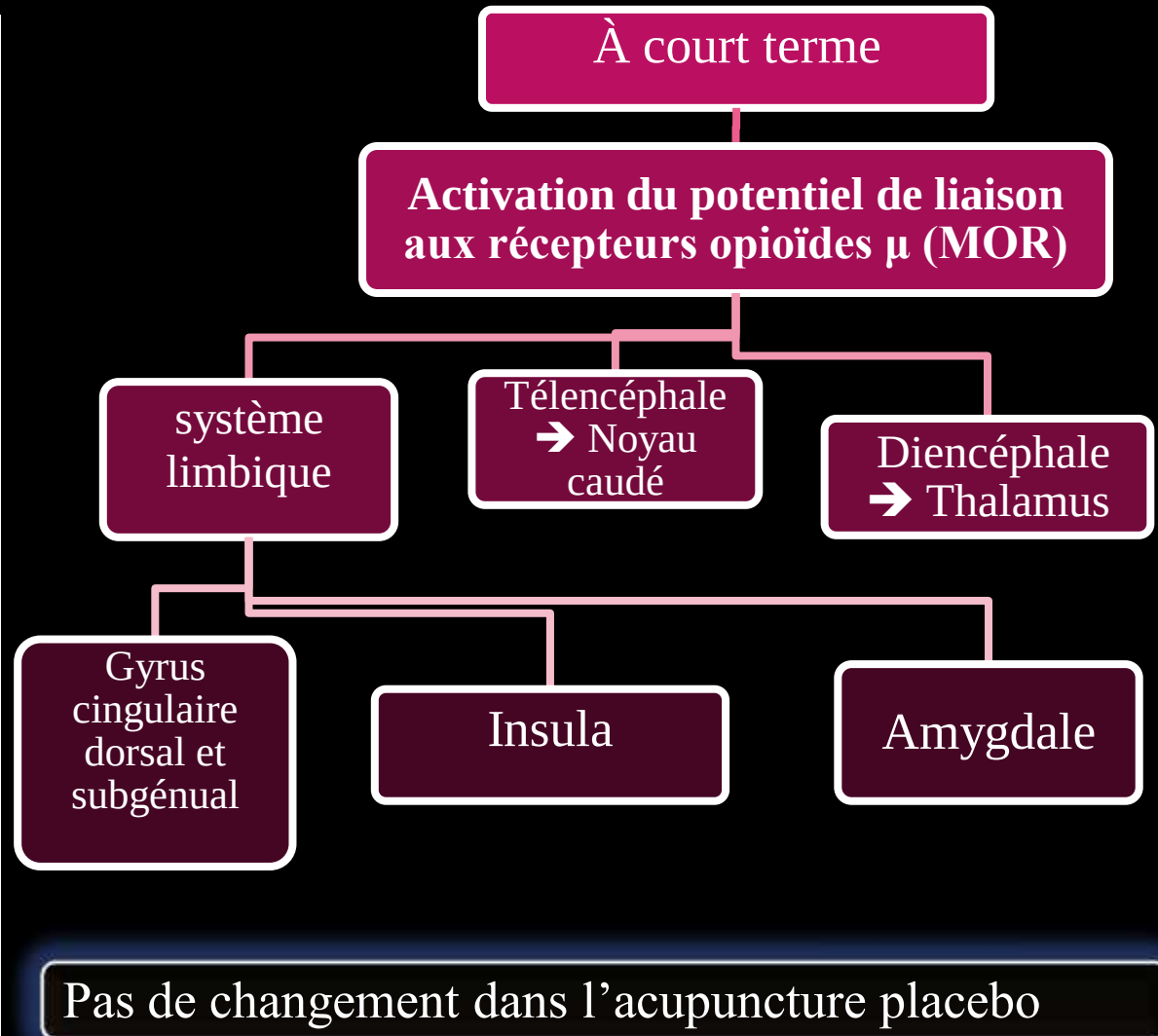


Fig. 2. Differential short-term effects of acupuncture and sham acupuncture on MOR binding. (a) Regions of interest showing increased MOR BP following acupuncture as compared to sham treatment. Upper left: left nucleus accumbens (INAC), upper right: three thalamic regions (THA), lower left and right: left amygdala (IAMY), and temporal pole (ttmpole) respectively. (b) Percent changes and S.E.M. in MOR BP (treatment1-baseline1) for all regions identified. Red circles (TA) and black circles (SA) represent group mean values with standard error bars. Overall acupuncture resulted in increases in MOR BP with sham treatment resulting largely in either no change or small decreases in BP.



Différence entre acupuncture placebo et acupuncture réelle dans la fibromyalgie

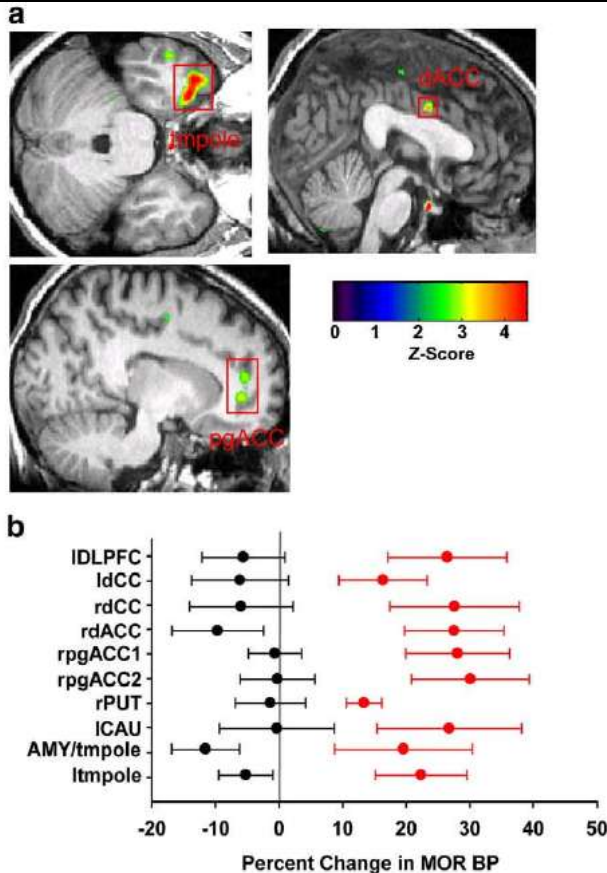
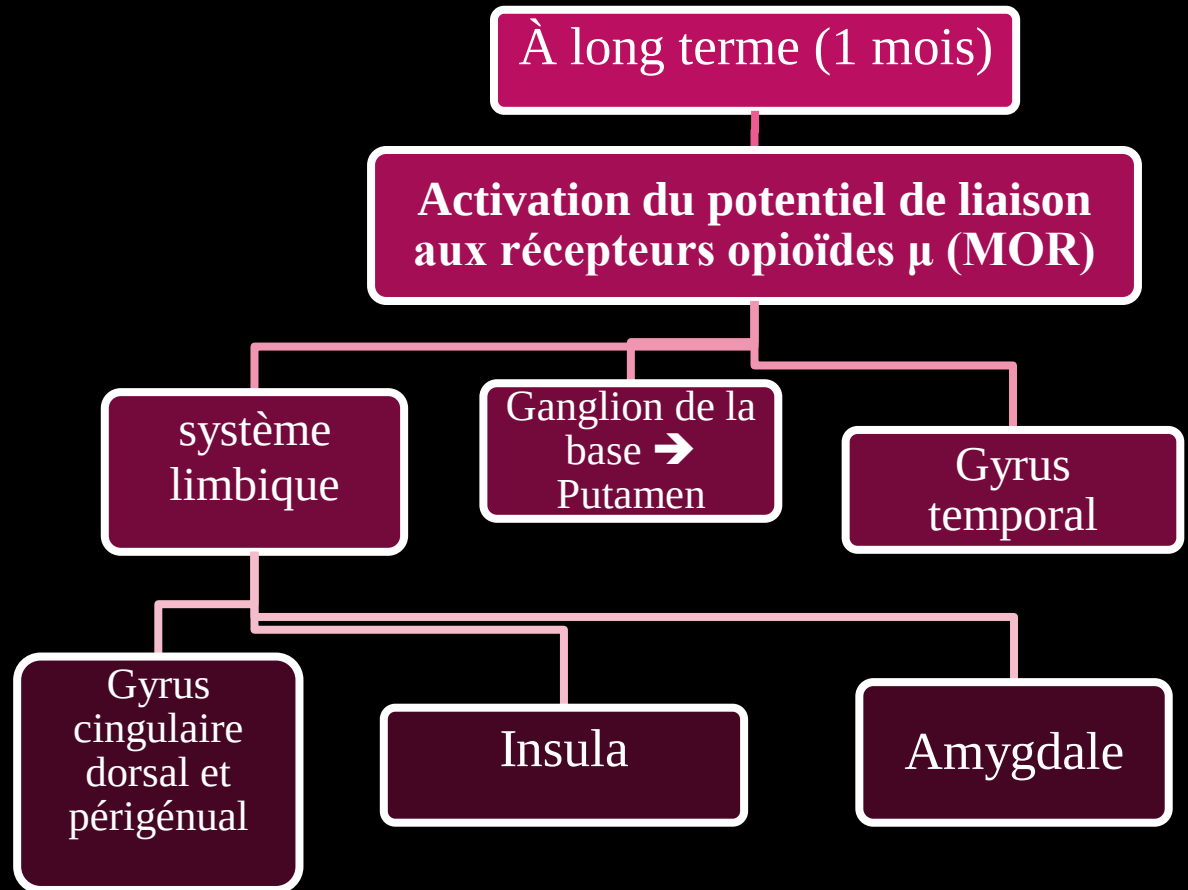


Fig. 3. Differential long-term effects of acupuncture and sham acupuncture on MOR binding. (a) Regions of interest showing increased MOR BP following acupuncture as compared to sham treatment. Upper left: temporal pole (ltmpole), upper right: dorsal anterior cingulate cortex (dACC), lower left: two perigenual anterior cingulate regions (pgACC). (b) Percent changes and S.E.M. in MOR BP (baseline2-baseline1) for all regions identified. Red circles (TA) and black circles (SA) represent group mean values with standard error bars. Overall acupuncture resulted in an increase in MOR BP whereas sham treatment resulted in either no change or a decrease in binding ability.



Pas de changement dans l'acupuncture placebo

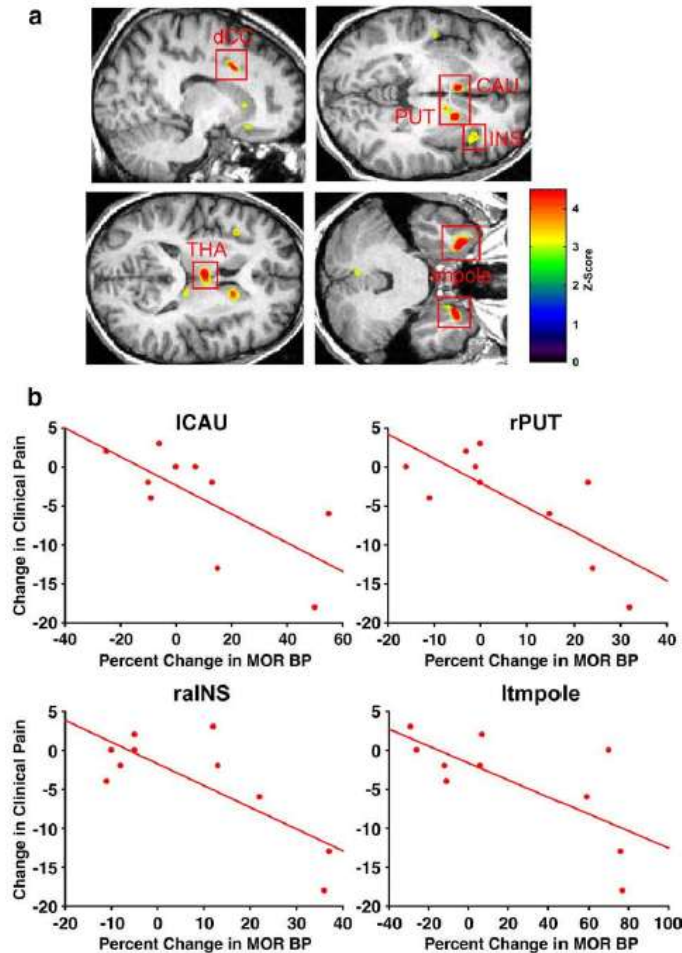
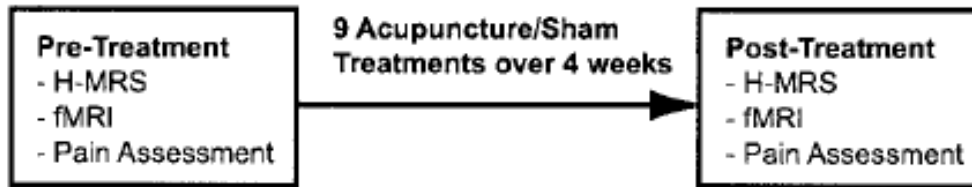


Fig. 4. Long-term increases in MOR binding following acupuncture are associated with reductions in clinical pain. (a) Regions of interest showing negative correlations between changes in MOR BP (baseline2–baseline1) and changes in clinical pain (pain assessment2–pain assessment1) following acupuncture. Upper left: left dorsal cingulate cortex (ldICC), upper right: left caudate (ICAU), right putamen (rPUT), and right anterior insula (raINS), lower left: left medial thalamus (lmtHA), lower right: bilateral temporal pole (ltmpole). (b) Scatter plots of percent changes in MOR BP (post–pre) and changes in clinical pain (post–pre) for four regions depicted in A.

Corrélations à long-terme entre diminution de la douleur et
augmentation des liaisons MOR

Action sur le glutamate



ECR (n=10) : fibromyalgie + douleur expérimentale par pression provoquée sur l'ongle du pouce gauche

Protocole : acupuncture versus placebo

IRMf + Spectrométrie RMN à protons avant et après traitement (9 séances sur 4 semaines)

Critère principal : évaluation de l'imagerie cérébrale du glutamate

Critère secondaire : évaluation de la douleur de la fibromyalgie et de la douleur provoquée

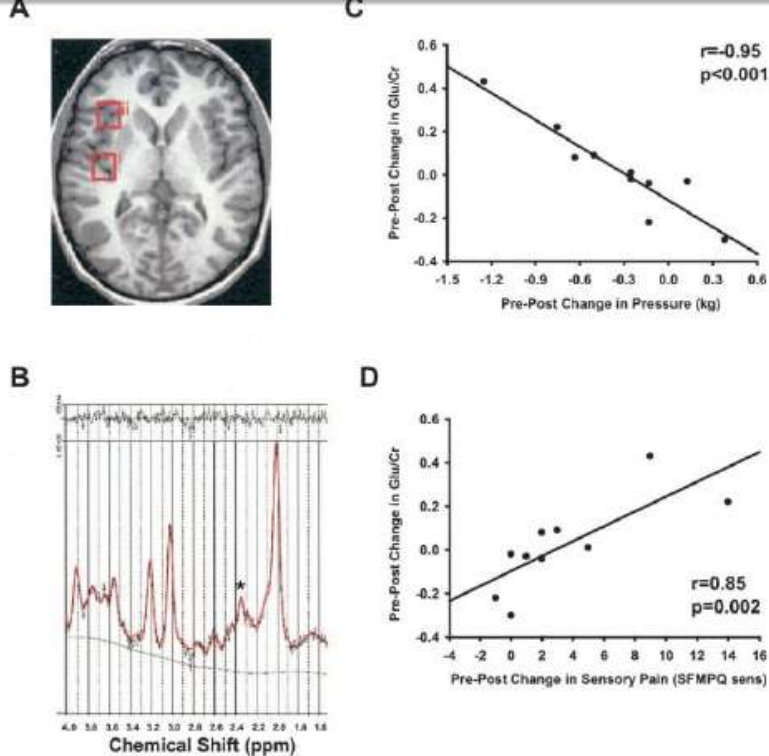


Figure 2. Association of changing levels of glutamate (Glu) with improvements in pain outcomes in patients with fibromyalgia (FM). **A**, Axial T1-weighted image showing single-voxel placement for both the posterior (i) and anterior (ii) right insula in proton magnetic resonance spectroscopy (H-MRS). **B**, Representative H-MRS spectrum from the posterior insula of a patient with FM, analyzed by fitting data with the LCModel, which uses a linear combination of individual spectra obtained from pure molecular species to fit the experimental spectra (red trace); * = resonance from 2 Glu γ -proton resonances at 2.35 ppm. Values for Glu were calculated as a ratio to the creatine (Cr) internal standard (Glu/Cr). **C**, Negative correlation of pre- to post-treatment changes in Glu/Cr within the posterior insula with pre- to post-treatment changes in mildly painful pressure-evoked pain thresholds. **D**, Positive correlation of pre- to post-treatment changes in Glu/Cr within the posterior insula with pre- to post-treatment changes in clinical pain (assessed as the sensory pain score on the Short Form of the McGill Pain Questionnaire [SF-MPQ]).

À la spectrométrie IRM
Acupuncture →
corrélation négative
entre glutamate et
douleurs à la pression
dans l'insula postérieure

Acupuncture →
Corrélation positive
entre douleurs de la
fibromyalgie et valeurs
du glutamate (Glu/Cr)
au niveau de **l'insula
postérieure**

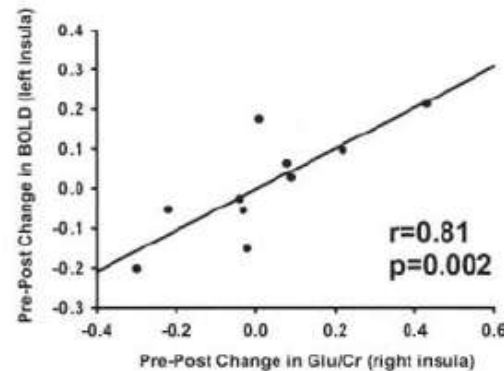
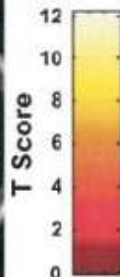
- Dans les 2 groupes : amélioration significative de la douleur de la fibromyalgie ($p=0,043$) et de la douleur provoquée ($p=0,047$) versus prétraitement

Pas de spécificité

augmentation du signal BOLD à l'IRMf → augmentation localisée dans les régions cérébrales activées (reflet de l'utilisation du glutamate) par action de l'acupuncture

→ insula postérieure contro-latérale à la douleur à la pression

A



Action sur la sérotonine (5HT)

Table 1 All evaluated parameters before and after acupuncture treatment (means $\pm$ SEM are given)

	Before therapy	After therapy	Significance
VAS (mm)	64.0 $\pm$ 3.4	34.5 $\pm$ 4.3	$P<0.001$
Tender points (<i>n</i>)	16.0 $\pm$ 0.6	11.8 $\pm$ 1.0	$P<0.01$
Serotonin (μ g/ 10^{12} platelets)	715.8 $\pm$ 225.8	352.4 $\pm$ 47.9	$P<0.01$
Serotonin in serum (ng/ml)	134.0 $\pm$ 14.3	171.2 $\pm$ 14.6	$P<0.01$

Acupuncture (n=29) → augmentation de la sérotonine sérique par libération de la sérotonine dans les plaquettes

Conclusion

L'acupuncture doit faire partie de
l'arsenal thérapeutique dans la
fibromyalgie (mais en complément)



Nécessité de nouveaux ECR de haute
qualité méthodologique



Semble plus efficace dans l'amélioration
des douleurs chroniques



moins dans les autres symptômes
(troubles du sommeil, asthénie, troubles
de l'humeur, anxiété, état dépressif)

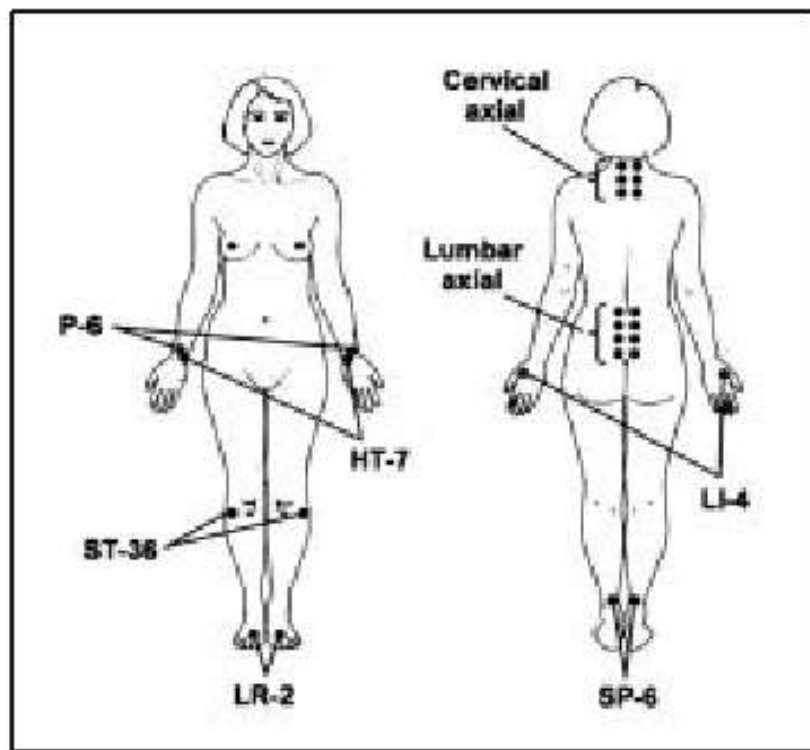


FIGURE 2. Acupuncture points. Needles were placed at the large intestine 4 (LI-4), stomach 36 (ST-36), liver 2 (LR-2), spleen 6 (SP-6), pericardium 6 (P-6), and heart 7 (HT-7). Electrical stimulation was provided between LI-4 and ST-36 at 2 Hz. Axial points were placed along the bladder meridian and stimulated at 10 Hz. The cervical axial circuit was used only during the first 3 sessions, and the lumbar axial circuit was used only during the last 3 sessions.



EA 2 Hz → 4GI et 36ES
EA 10HZ points Vessie

À 1 mois de traitement : amélioration de la douleur ($p=0,03$)
mais davantage l'asthénie ($p=0,001$) et l'anxiété ($p=0,003$)