

## Antioxidants may increase with acupressure stimulation

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### **Effect of auricular pellet acupressure on antioxidative systems in high-risk diabetes mellitus.**

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**OBJECTIVES:** Free radicals and lipid peroxides, both of which are easily formed in the diabetic state, play an important role in the development of diabetic complications. Antioxidative therapy may help prevent diabetic complications caused by lipoperoxidation and free-radical formation in diabetes mellitus (DM). A number of findings suggest that oxidative stress exists in persons with high-risk DM. Auricular pellet acupressure has reportedly been an effective treatment method for a variety of medical conditions, including anxiety, juvenile myopia, essential hypertension, and senile vascular dementia. However, its effects on antioxidative enzymes have not been elucidated. We therefore evaluated the impact of auricular pellet acupressure on antioxidative status in persons with high-risk DM. **SUBJECTS:** Our study involved 69 persons with high-risk DM, who were allocated either to undergo acupressure as active treatment for the experimental group or to a control group. **INTERVENTIONS:** The experimental group in the study received auricular pellet acupressure three times daily for 5 consecutive days. After a 2-day rest period, the procedure was performed on the contralateral ear. Acupressure was performed twice on each ear, with each application followed by its application to the contralateral ear, over a total treatment period of 20 days. The control groups did not undergo auricular pellet acupressure. **DESIGN AND OUTCOME MEASURES:** At the end of the 20-day period of treatment of the experimental group, blood was collected from all of the study participants for assay of serum superoxide dismutase (SOD) and catalase concentrations, as was also done for the control group. **RESULTS:** Serum concentrations of SOD ( $p < 0.05$ ) and catalase ( $p < 0.0001$ ) were significantly higher in the experimental group than in the control group. **CONCLUSIONS:** Our findings suggest that auricular pellet acupressure can increase the concentration of antioxidative enzymes in persons with high-risk DM.

## **Anxiety reduction with acupressure and acupuncture on the same acupoint**

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### **Extra-1 acupressure for children undergoing anesthesia.**

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**BACKGROUND:** Acupuncture and related techniques have been used as adjuncts for perioperative anesthesia management. We examined whether acupressure in the Extra-1 (Yin-Tang) point would result in decreased preprocedural anxiety and reduced intraprocedural propofol requirements in a group of children undergoing endoscopic procedures. **METHODS:** Fifty-two children were randomized to receive acupressure bead intervention either at the Extra-1 acupuncture point or at a sham point. A Bispectral Index (BIS) monitor was applied to all children before the onset of the intervention. Anxiety was assessed at baseline and before entrance to the operating room. Anesthetic techniques were standardized and maintained with IV propofol infusion titrated to keep BIS values of 40-60. **RESULTS:** We found that after the intervention, children in the Extra-1 group experienced reduced anxiety whereas children in the sham group experienced increased anxiety (-9% [-3 to -15] vs 2% [-6 to 7.4],  $P = 0.012$ ). In contrast, no significant changes in BIS values were observed in the preprocedural waiting period between groups ( $P = ns$ ). We also found that total intraprocedural propofol requirements did not differ between the two study groups ( $214 \pm 76 \text{ microg} \times \text{kg}^{-1} \times \text{min}^{-1}$ ) vs  $229 \pm 95 \text{ microg} \times \text{kg}^{-1} \times \text{min}^{-1}$ ),  $P = 0.52$ ). **CONCLUSIONS:** We conclude that acupressure bead intervention at Extra-1 acupoint **reduces preprocedural anxiety** in children undergoing endoscopic procedures. This intervention, however, has no impact on BIS values or intraprocedural propofol requirements.

[Am J Chin Med.](#) 2004;32(5):789-94.

## **Needling of the extra 1 point decreases BIS values and preoperative anxiety.**

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**Acupuncture has anxiolytic effects.** We investigated the effect of acupuncture on the Bispectral Index (BIS) values and anxiety. Fifty patients were randomly assigned to group A to receive acupuncture for 15 minutes on the extra 1 point (yintang) or to group C, where they received the same treatment on a control point located 2 cm lateral to the end of the right eyebrow. BIS values were recorded before acupuncture; during acupuncture every 30 seconds for 15 minutes and every 30 seconds for 90 seconds when the acupuncture treatment was accomplished. Anxiety level was assessed before and after acupuncture by a verbal score scale (VSS) (0 = no anxiety, 10 = worst anxiety). BIS values were **significantly decreased during acupuncture when applied on the extra 1 point (p = 0.0001) but not on the control point.** Acupuncture application significantly decreased the VSS values within the A group (p = 0.027) and in the C group (p = 0.0001), when compared to the baseline (pre-acupuncture) VSS values. However, no differences were found between the two groups regarding BIS or VSS values. In conclusion, needling the extra 1 point preoperatively significantly decreases the BIS values and the VSS for anxiety but needling of a control point decrease only VSS values.

## **Brain wave EEG shows sedation produced by acupressure also acupressure can produce a calming effect on the autonomic nervous system as measured by HRV**

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[Eur J Anaesthesiol.](#) 2004 Jan;21(1):13-9.

### **Effects of acupressure, manual acupuncture and Laserneedle acupuncture on EEG bispectral index and spectral edge frequency in healthy volunteers.**

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**BACKGROUND AND OBJECTIVE:** The main purpose of this study was to investigate the effects of sensory (acupressure and acupuncture) and optical stimulation (Laserneedle acupuncture) on electroencephalographic bispectral index, spectral edge frequency and a verbal sedation score. **METHODS:** Twenty-five healthy volunteers (mean age +/- SD: 25.5 +/- 4.0yr) were investigated during the awake state. The acupuncture point Yintang and a placebo control point were stimulated. The study was performed as a randomized, controlled and partly blinded cross-over trial. **RESULTS:** Bispectral index and spectral edge frequency values both decreased significantly ( $P < 0.001$ ) during acupressure on Yintang to values of 62.9 (minimum 35) +/- 13.9 bispectral index and to 13.3 (minimum 2.9) +/- 8.1 Hz (spectral edge frequency right) and 13.8 (minimum 2.7) +/- 7.3 Hz (spectral edge frequency left), respectively. Bispectral index was also significantly ( $P < 0.05$ ) affected by Laserneedle acupuncture and acupressure on the control point but the changes were not clinically relevant, 95.4 +/- 4 and 94.2 +/- 4.8, respectively. All interventions significantly (Yintang:  $P < 0.001$ ; control point:  $P < 0.012$ ) reduced verbal sedation score. **CONCLUSIONS:** The study highlights the electroencephalographic similarities of **acupressure induced sedation** and general anaesthesia as assessed by bispectral index and spectral edge frequency.

[Evid Based Complement Alternat Med.](#) 2008 Sep 30. [Epub ahead of print]

## **The Influence of Acupressure at Extra 1 Acupuncture Point on the Spectral Entropy of the EEG and the LF/HF Ratio of Heart Rate Variability.**

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**Acupressure applied on the Extra 1 acupuncture point results in sedation**, thereby reducing bispectral index (BIS) values. Mental status and hypnotic agents influence the autonomic nervous system. We hypothesized that acupressure at the Extra 1 point would **induce sedation and change sympatho-parasympathetic nerve balance**. We investigated the effect of acupressure at the Extra 1 point on the EEG spectral entropy values and heart rate variability (HRV). Forty-eight volunteers (24 males and 24 females) were randomly assigned to the control or Extra 1 group. The control group received acupressure at a sham point and the Extra 1 group received acupressure at the Extra 1 point. Acupressure was applied for 5 min. The record of the EEG spectral entropy values and HRV started 5 min before acupressure and stopped 5 min after acupressure. Acupressure significantly reduced the EEG spectral entropy values in both groups, but the values of the Extra 1 group were significantly smaller than those of the control group ( $P < 0.01$ ). Acupressure significantly decreased the LF/HF ratio of HRV in both groups ( $P < 0.05$ ). When divided upon gender, although acupressure tended to decrease the LF/HF ratio, the ratio significantly decreased during and after acupressure only in females of the Extra 1 group ( $P < 0.05$ ). We concluded that acupressure on the Extra 1 point significantly reduced the EEG spectral entropy in both the genders, but affected the LF/HF ratio of HRV only in females.

[Anesth Analg.](#) 2008 Aug;107(2):661-4.

## **The effect of acupressure at the extra 1 point on subjective and autonomic responses to needle insertion.**

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**BACKGROUND:** Premedication with sedatives can decrease the discomfort associated with invasive anesthetic procedures. **Some researchers have shown that acupressure on the acupuncture extra 1 point is effective for sedation.** We investigated whether acupressure on the extra 1 point could alleviate the pain of needle insertion. **METHODS:** We investigated the effect of acupressure at the extra 1 point or a sham point on needle insertion using verbal rating scale (VRS) pain scores and heart rate variability (HRV). Twenty-two healthy female volunteers were randomly allocated to two groups: the extra 1 group received acupressure at the extra 1 point, and the sham group received acupressure at a sham point. After starting the electrocardiogram record, a 27-gauge needle was inserted into the skin of a forearm. Thereafter, another needle was inserted into the skin of the other forearm during acupressure. **RESULTS:** Acupressure at the extra 1 point significantly reduced the VRS, but acupressure at the sham increased the VRS. Acupressure at the extra 1 significantly reduced the low frequency/high frequency ratio of HRV responding to needle insertion. **CONCLUSIONS:** Acupressure at the extra 1 point significantly reduced needle insertion pain compared with acupressure at the sham point. Also, acupressure at the extra 1 point significantly reduced the low frequency/high frequency ratio of HRV responding to needle insertion, which implies **a reduction in sympathetic nervous system activity.**

## **Both acupressure and acupuncture improve energy and reduce fatigue in cancer patients after chemotherapy**

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[Complement Ther Med.](#) 2007 Dec;15(4):228-37. Epub 2006 Nov 13.

### **The management of cancer-related fatigue after chemotherapy with acupuncture and acupressure: a randomised controlled trial.**

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**BACKGROUND:** Cancer-related fatigue after chemotherapy is a difficult symptom to manage in practice and the most disruptive symptom in patients' lives. Acupuncture is a popular complementary therapy among cancer patients and some evidence exists that it could potentially alleviate fatigue by stimulating 'energy' points in the body. Hence, this study was carried out to assess the effects of acupuncture and acupressure in managing cancer-related fatigue and the feasibility of running a randomised trial with these two complementary therapies in preparation for a large trial. **METHODS:** This study was a randomised controlled trial. Forty-seven patients with cancer who experienced moderate to severe fatigue were randomised either to an acupuncture group (n=15), an acupressure group (n=16) or a sham acupressure group (n=16). The acupuncture group received six 20-min sessions over 2 weeks, while the patients in the two acupressure groups were taught to massage/press the points and did so daily thereafter for 2 weeks on their own. Patients completed the Multidimensional Fatigue Inventory before randomisation, at the end of the 2-week intervention and again about 2 weeks after the end of the intervention. **RESULTS:** Significant improvements were found with regards to General fatigue (P<0.001), Physical fatigue (P=0.016), Activity (p=0.004) and Motivation (P=0.024). At the end of the intervention, there was a 36% improvement in fatigue levels in the acupuncture group, while the acupressure group improved by 19% and the sham acupressure by 0.6%. Improvements were observed even 2 weeks after treatments, although they were lower (22%, 15%, 7%, respectively). Acupuncture was a more effective method than acupressure or sham acupressure. Subjects needed a longer treatment period to have more sustained results. The trial was methodologically feasible. **CONCLUSION:** Acupuncture shows great potential in the management of cancer-related fatigue. As a randomised trial with acupuncture is feasible and preliminary data shows significant improvements, it should be tested further using a large sample and a multicentre design.

## **Antioxidant levels may increase with acupuncture stimulation or be maintained during stress**

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[J Tradit Chin Med.](#) 2002 Mar;22(1):51-4.

### **Effect of acupuncture on free radicals in rats with early experimental spinal cord injury.**

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Effect of acupuncture on free radicals after spinal cord injury was observed in rats with experimental spinal cord injury (SCI). Results indicated that within 24 hours after SCI malondialdehyde (MDA) increased progressively, 2 hours after SCI it reached the peak; and the superoxide dismutase (SOD) activity decreased significantly at the same hours, the decrease being the most marked 2-6 hours after SCI. The MDA content in the acupuncture group was significantly lower ( $P < 0.05$ ) and the SOD activity higher ( $P < 0.01$ ) than that of the control group respectively. It is suggested that **acupuncture** inhibits production of MDA and **increases the SOD activity**.



[Zhongguo Zhen Jiu](#). 2006 Apr;26(4):291-4.

**[Effects of scalp acupuncture on regulative ability of oxidative stress reaction at operation stage]**

[Article in Chinese]

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**OBJECTIVE:** To study on regulative action of scalp acupuncture on oxidative stress reaction at operation stage. **METHODS:** Fifty two cases selected for radical operation of intestinal cancer were randomly divided into a scalp acupuncture plus general anesthesia (scalp acupuncture group) and a simple general anesthesia group (general anesthesia group), 26 cases in each group. The scalp acupuncture group were treated first with scalp acupuncture for 20 min, followed by general anesthesia, with scalp acupuncture lasted till the end of operation. The general anesthesia group were treated only with simple intratracheal anesthesia. Effects of scalp acupuncture on malondialdehyde (MDA) level and superoxide dismutase (SOD) activity at the operation stage were observed. **RESULTS:** After operation, MDA levels decreased significantly ( $P < 0.05$ ) in the two groups, but with no difference between the two groups in the different values of MDA before and after treatment ( $P > 0.05$ ); there was no significant change in SOD before and after treatment in the scalp acupuncture group, and significantly decreased in the general anesthesia group ( $P < 0.05$ ). There was a significant difference between the two groups in the different value of SOD before and after the operation ( $P < 0.05$ ). **CONCLUSION: Scalp acupuncture can inhibit the decrease of SOD activity, reducing oxidative stress reaction at operation stage.**

[Zhongguo Zhen Jiu](#). 2006 Apr;26(4):240-2.

**[Effects of head point-through-point electroacupuncture on SOD and LPO in the patient of Parkinson's disease]**

[Article in Chinese]

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**OBJECTIVE:** To observe clinical therapeutic effect of head point-through-point electroacupuncture on Parkinson's disease and the mechanism. **METHODS:** Seventy-six cases of Parkinson's disease were randomly divided into a treatment group (n=37) treated with head point-through-point electroacupuncture and oral administration of madopa, and a control group (n=39) with only oral administration of madopa. Superoxide dismutase (SOD) and lipids peroxides (LPO) were determined before and after treatment. **RESULTS:** The effective rate was 97.3% in the treatment group and 61.5% in the control group with a very significant difference between the two groups ( $P < 0.01$ ). SOD activity and LPO content were significantly improved after treatment in the treatment group ( $P < 0.01$ ), with a significant difference between the two groups ( $P < 0.01$ ). **CONCLUSION:** **Head point-through-point electroacupuncture can improve SOD activity and LPO content in the body.**

[Neurosci Lett.](#) 2006 Jan 23;393(1):45-50. Epub 2005 Oct 19.

**Acupuncture prevents cognitive deficits and oxidative stress in cerebral multi-infarction rats.**

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The aim of this study is to investigate the effects of acupuncture on cognitive deficits and oxidative stress in cerebral multi-infarction rats. The results showed that acupunctural treatment attenuated memory impairment induced by cerebral multi-infarction, as evaluated by shortened escape latency and increased swimming time of rats with memory impairment in the target quadrant. The data additionally suggested that acupunctural treatment ameliorated oxidative injuries induced by cerebral multi-infarction by increasing the activities of superoxide dismutase (SOD) and glutathione peroxidase (GSH-Px) in the hippocampus. Further investigation by in situ hybridization and immunohistochemistry revealed that acupunctural treatment significantly increased the expression of CuZnSOD mRNA and protein in the hippocampus of the impaired rats. The findings demonstrate that **acupuncture can exert beneficial effects on spatial memory and antioxidant status** of cerebral multi-infarction rats.

[Bull Exp Biol Med.](#) 2004 Jul;138(1):26-9.

## **Antioxidant status of erythrocytes after acupuncture treatment.**

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A course of acupuncture therapy in patients with locomotor, peripheral nervous system, gynecological, and bronchopulmonary diseases led to complete or partial normalization of nonspecifically changed MDA content, catalase and glutathione peroxidase activities in erythrocytes. SOD activity increased after therapy and did not differ from the control.

**Acupuncture stabilized disordered LPO processes and improved the antioxidant status of erythrocytes.**

## Acupuncture has a relaxing effect and may help insomnia

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[J Neuropsychiatry Clin Neurosci](#). 2004 Winter;16(1):19-28.

**Acupuncture increases nocturnal melatonin secretion and reduces insomnia and anxiety: a preliminary report.**

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The response to acupuncture of 18 anxious adult subjects who complained of insomnia was assessed in an open prepost clinical trial study. Five weeks of acupuncture treatment was associated with a significant ( $p = 0.002$ ) nocturnal increase in endogenous melatonin secretion (as measured in urine) and significant improvements in polysomnographic measures of sleep onset latency ( $p = 0.003$ ), arousal index ( $p = 0.001$ ), total sleep time ( $p = 0.001$ ), and sleep efficiency ( $p = 0.002$ ). Significant reductions in state ( $p = 0.049$ ) and trait ( $p = 0.004$ ) anxiety scores were also found. These objective findings are consistent with clinical reports of **acupuncture's relaxant effects. Acupuncture treatment may be of value for some categories of anxious patients with insomnia.**