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Influence of alignment of the pyramid on its beneficial effects

Surekha Bhat, Guruprasad Rao, K Dilip Murthy* & P Gopalakrishna Bhat[+]

Departments of Biochemistry and *Physiology, Melaka Manipal Medical College, International Centre for Health Sciences, Manipal 576 104, India and [+]Department of Biochemistry, Kasturba Medical College, Manipal 576 104, India

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The present study was aimed to find out whether a change in the alignment of the pyramid from the north-south axis causes any variation in the effects produced by it on plasma cortisol levels and markers of oxidative stress in erythrocytes of adult female Wistar rats. Plasma cortisol and erythrocyte TBARS levels were significantly lower whereas erythrocyte GSH was significantly higher in rats kept in pyramid that was aligned on the four cardinal points—north, east, south and west, as compared to normal control rats. Although there was a significant difference in the plasma cortisol level between normal control group and the group of rats kept in randomly aligned pyramid, there was no significant difference between these two groups for the other parameters. Erythrocyte TBARS levels in the group of rats kept in the randomly aligned pyramid was significantly higher than that in the group kept in the magnetically aligned pyramid. The results suggest that the north-south alignment of the pyramid is crucial for its expected effects.

Keywords: Cortisol, Glutathione, North-south, Pyramid model, Stress, TBARS

The Giza pyramids of Egypt have been the subject of much research. Pyramid models with the same base to height ratio as of the Great Pyramid of Giza, when aligned on a true north-south axis, are believed to generate, transform and transmit energy. The effect of this 'pyramid energy' has been studied on solids, liquids, plants, animals and even human volunteers. Some of the findings of such studies include rapid growth of plants, faster healing of bruises and burns, longer preservation of milk and increased vitalization and better relaxation in human subjects[1]. Research using pyramid models has shown that they promote greater relaxation and improved tranquility in human subjects[1,2], better wound healing in rats[3,4], and protection against stress-induced neurodegenerative changes in mice[5]. Studies with pyramid models have also shown that pyramid environment enhances learning and memory[5]. Exposure of adult female Wistar rats to pyramid environment reduces stress, oxidative stress and increases antioxidant defence in them[6]. Chronic restraint stress in adult female rats induces neuroendocrine and oxidative stress but these effects are counteracted by the shape of the pyramid[7]. Home experiments all over the world emphasize on the need to align the pyramid in the geographic or magnetic north-south axis for best results[8-11]. Likewise, all the scientific studies reported above have been carried out with the pyramid aligned on a true north-south axis. However, to the best of our knowledge, no study is available to scientifically confirm that the north-south alignment of pyramid models is mandatory to realize their beneficial effects. The objective of the present study was to determine whether a change in the alignment of the pyramid from the north-south axis causes any variation in the effects produced by it on plasma cortisol level, markers of oxidative damage and antioxidant defence in erythrocytes of adult female Wistar rats.

Materials and Methods

Animals—Adult female Wistar albino rats (3-4 month old) weighing 130-220g were used for the studies. Standard pelleted food and water was provided *ad libitum* to all the groups. Proper ventilation was provided. Standard hygienic conditions were maintained in the animal house and the rats were exposed to proper light and dark cycle (12 hr each of light and darkness). The experimental protocol was approved by the Institutional Animal Ethics Committee.

Experimental design—Rats were divided into three groups, (i) normal controls (NC, n=8) that were maintained under standard laboratory conditions in their home cages, (ii) pyramid exposed group-NS (PE-NS, n=8) where the rats were housed in pyramid

Phone: 91 820 2922641
Fax: 91 820 2571905
e-mail: surekha.bhat@ manipal.edu

for 6 hr/day for 2 weeks with the pyramid being aligned on the four cardinal points—north, east, south and west as specified by Schul and Pettit[8] and (iii) pyramid exposed group-R (PE-R, n=8) where the rats were housed in a randomly aligned pyramid for 6 hr/day for 2 weeks. Blood samples were collected and processed as mentioned earlier. Plasma cortisol and erythrocyte TBARS as well as glutathione levels were estimated.

Pyramid model design—Since conducting materials like metals are believed to block the electromagnetic forces owing to their tendency to absorb the energy[8], wood was chosen as the pyramid material. A wooden pyramid model of 30″ height, 45″ base and 41.5″ side[9] fabricated locally was used for the study. Holes were provided for ventilation. A small glass window was provided for observation. The four triangular sides of the pyramid angled upwards at nearly 51° to the base and met at the apex of the pyramid. The pyramid rested on a wooden base.

Procedure of exposure of the rats within the pyramid—For the PE-R group, the pyramid was randomly aligned whereas for the PE-NS group, the pyramid was aligned on the four cardinal points-north, east, south and west as specified by Schul B and Pettit E[8].

Only one polypropylene cage each, with three to four rats, was placed in the pyramid at any given time. The cage was placed such that its long axis was in the magnetic north-south with the food and water in the north. Maximum effect of the pyramid is believed to be exerted at one third the height of the pyramid from its base. Hence, a wooden stool, of 10″ height, was placed in the pyramid and the cage was kept on this stool.

Estimation of plasma cortisol levels—Plasma (2 ml) was mixed with 15 ml methylene dichloride and centrifuged to separate plasma and methylene dichloride layer. The lower methylene dichloride layer was used for cortisol estimation[12]. A blank containing 2 ml water and a standard containing 2 ml of standard cortisol were included in the assay. The extract (10 ml) was then mixed with 5 ml fluorescence reagent containing 70% conc. H_2SO_4 and 30% absolute ethanol (v/v). The fluorescence of the lower layer of acid extract was measured at 530 nm at exactly 12 min after adding the fluorescence reagent, with excitation wavelength 470 nm. Cortisol concentration was expressed as nanomoles/litre of plasma.

Estimation of erythrocyte membrane lipid peroxidation—Packed red cells (0.2 ml) were used for the estimation of MDA as thiobarbituric acid reactive substances (TBARS)[13]. The absorbance at 600 nm was subtracted from absorbance at 532 nm. TBARS was expressed as nmoles/g hemoglobin. Hemoglobin concentration was measured by cyanmethemoglobin method of Drabkin[14].

Estimation of reduced glutathione (GSH)—Reduced glutathione level in rat erythrocytes was measured by the method of Beutler *et al*[15]. Packed red cells (0.2 ml) were used in the assay. The glutathione was made to react with 5,5′-dithiobis (2-nitrobenzoic acid; DTNB) which reacts with sulfhydryl groups, to develop a stable color. The absorbance was measured at 412 nm. Glutathione content was expressed as mg/g hemoglobin.

Stastical analysis—All results were statistically analyzed using one-way analysis of variance (ANOVA) in the Graph Pad Instat (GPIS) package.

Results and Discussion

The results are presented in Fig.1 (a-c).

A remarkable feature of the great pyramid is its very accurate orientation along the true north-south axis. How this was achieved by its builders is still a matter of debate but the evidence continues to grow that the great pyramid and its replicas are, by either design or by accident, multiforce field generators[16]. These energy fields are believed to be generated if the pyramid is aligned along the true north-south axis[8-10].

Research has shown that pyramid models promote greater relaxation and improved tranquility in human subjects[1,2], better wound healing in rats[3,4], and protection against stress induced neurodegenerative changes in mice[5]. Studies with pyramid models have also shown enhanced learning and memory within a pyramid environment[5]. Exposure of adult female Wistar rats to pyramid environment reduces stress, oxidative stress and increases antioxidant defence in them[6]. Chronic restraint stress in adult female rats induces neuroendocrine and oxidative stress but these effects are counteracted by the shape of the pyramid[7]. In all these above studies, the north-south orientation of the pyramid was adopted assuming that this is necessary for the best effects of pyramid exposure. The present study is a scientific evidence to the above assumption/claim.

In the present study, the PE-NS group had the lowest mean for plasma cortisol and erythrocyte

TBARS levels and the highest mean for erythrocyte GSH levels. These mean values were significantly different from those of the NC rats. EEG from subjects meditating in pyramids has shown higher frequency and higher amplitude alpha waves[17]. This could be the reason for the decreased plasma cortisol in the PE-NS rats suggesting that even normal levels of stress is decreased by exposure in a pyramid aligned in the north-south direction. These findings support earlier claims by human volunteers that sitting in a pyramid for a definite period of time results in greater relaxation[18]. The pyramid, by putting the mind into an alpha state, could probably make one less distracted by external stimuli, that is, decrease the cognitive appraisal of stress and hence decrease even basal levels of plasma cortisol. Schul and Pettit[19] believe that their time-lapse films showing plant movement inside pyramids provide evidence that a magnetic field exists within the pyramid. Concomitant repetitive transcranial magnetic stimulation in adult male rats has shown normalization of stress induced elevation of plasma corticotropin and corticosterone[20]. Bioresonance therapy that involves treatment with electromagnetic fields has shown increase in the content of thiol groups in blood lymphocytes of patients with rheumatoid arthritis[21]. In the light of these reports and the present findings, it can be said that a magnetic field, similar to that used in bioresonance and magnetotherapy, may exist in the pyramid. This field could have decreased the plasma cortisol and increased the erythrocyte GSH levels in PE-NS rats. These alterations could also have lowered the basal levels of oxidative stress in these rats as reflected by their significantly lower erythrocyte TBARS.

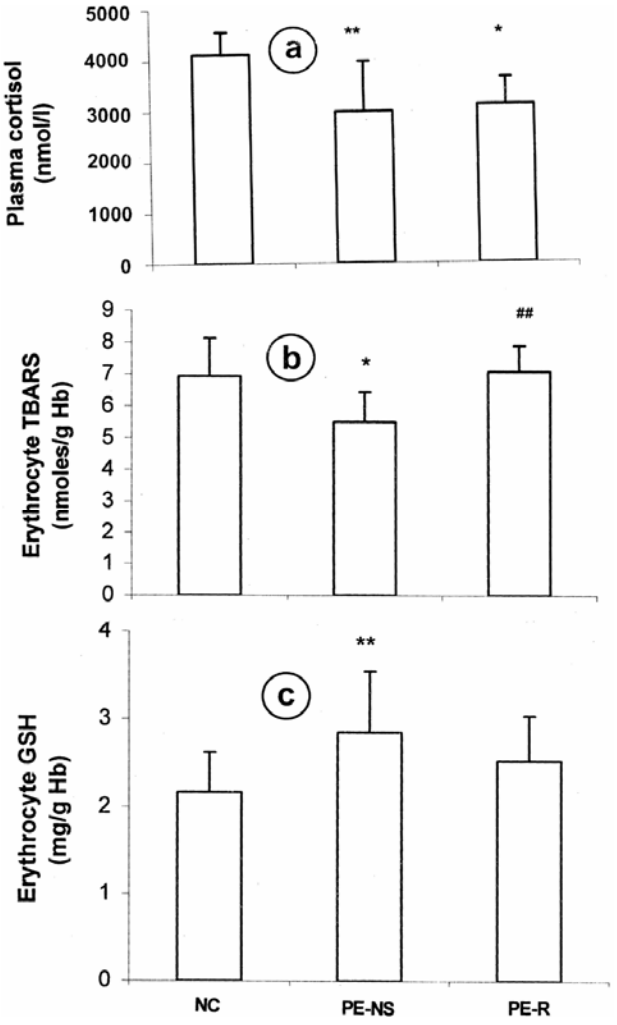

Fig. 1—Plasma cortisol (a), erythrocyte malondialdehyde (b) and erythrocyte reduced glutathione (c), in normal controls (NC), rats kept in pyramid aligned in the north-south (PE-NS) and rats kept in pyramid aligned randomly (PE-R). [Values are mean + SD. *P* values * <0.05, **<0.01 for NC vs PE-NS; ##<0.01 for PE-NS vs PE-R].

However, the above beneficial effects were not seen in the randomly aligned pyramid. Erythrocyte TBARS levels in the PE-NS rats were significantly lower than those in the PE-R rats. Although there was no significant difference in plasma cortisol and erythrocyte GSH levels between PE-NS and PE-R rats, the mean value for plasma cortisol was lower and that for erythrocyte GSH was higher in the PE-NS groups. These findings suggest that the north-south alignment of the pyramid is crucial for its expected effects and a shift in this alignment does affect the results as claimed by pyramidologists.

It can be concluded that exposure of adult female Wistar rats to pyramid environment reduces neuroendocrine stress and increases antioxidant defense which in turn reduces oxidative stress. This observation suggests that the shape of the housing has its effects and pyramid shaped housing appears to have beneficial effects as far as stress management is concerned. However, these effects are best seen when the pyramid is oriented in the north-south direction. Hence, pyramid shaped rooms accurately oriented in the north-south direction can be built in residences, rehabilitation centres, hospitals and recreation centres for therapeutic uses and relaxation.

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