

## Histological Verification of the Biological Active Points Characteristics (BAP)

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We tried to find some histological indications for existence of BAP. Usually there is a small skin pit covered with thin epithelium in point areas (HE). The connective tissue under the BAP is thinner compared with the areas outside of them (Mallory trichrome), and we established small quantity and a specific position of the collagen fibers, as well as increased number of blood vessels and nerve terminals (AgNO<sub>3</sub>).

*Key words:* acupuncture, Mallory, connective tissue, epithelium, active points.

### Introduction

The Biological Active Points and the energy channels are used in ancient China even at the time of the Chan dynasty (16<sup>th</sup>- 11<sup>th</sup> c. BC) [9, 10, 11, 12]. The modern science is trying to prove their existence using objective methods and analysis [1]. Most of the explorers use physic approaches (measuring the changes in the skin resistance) [4, 12], or merely the description of the clinical effect due to the stimulation of particular BAP [3, 7]. Many authors touch the pain as a big medical problem [2, 5, 6, 11] or describe alternative curative methods [8]. Publications concerning the special features of the tissue structure are rare. We didn't find any material about acupuncture point structure.

The object of this study is to estimate the presence of histological differences between the BAP and the tissues next to them. For the fulfillment of this object we selected a few major goals:

1. Estimation of the distinction between the structure and the thickness of the epithelial layer.
2. Proving the differences in the structure of the dermal connective tissue.
3. Comparative observation of the quantity of vascular and nerve elements in BAP and the tissues next to them.

## Material and Methods

The research is made on a not conserved human corpse, as the samples were taken from the regions of the Sanjiao (Qihai RN6; Tienshu ST25) and Dazhui DU14. We used the Mallory's trichrome colouring and haematoxylin-eosin after an including in paraffin block, and the silver method of Bodian after the slicing with the freezing microtome.

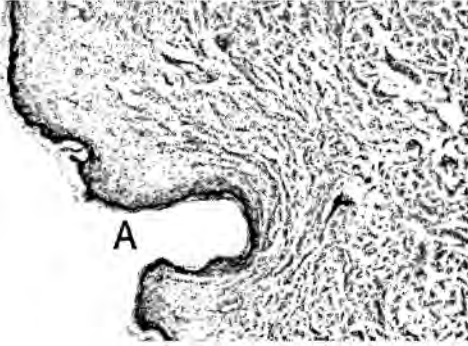


Fig. 1. HE colouring — Experimental group.  $\times 50$

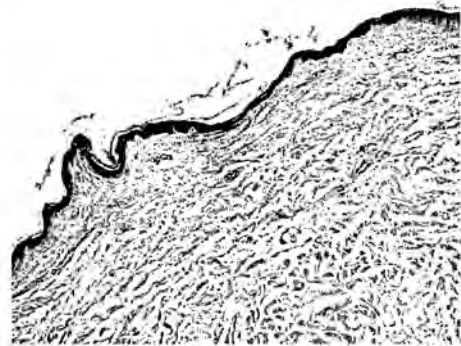


Fig. 2. HE colouring — Control group.  $\times 50$

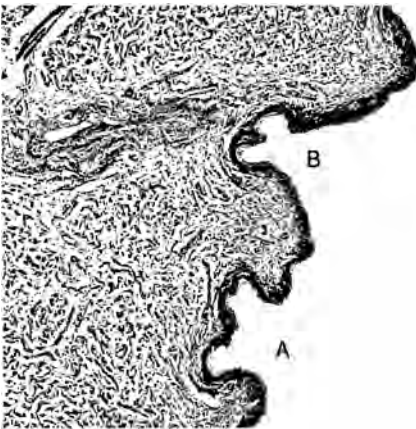


Fig. 3. Mallory trichrome colouring — Experimental group.  $\times 50$



Fig. 4. Mallory trichrome colouring — Control group.  $\times 50$

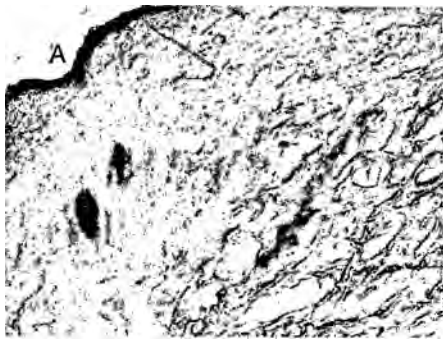


Fig. 5. Bodian colouring — Experimental group.  $\times 50$

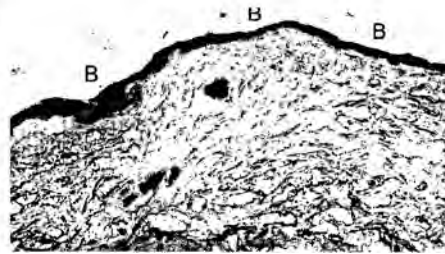


Fig. 6. Bodian colouring — Control group.  $\times 50$

## Results

In the area of the BAP a small pit (A) covered with thinner epithelium is seen, although the difference in the thickness comparing with the controls is not significant and could be found in other areas of the preparation (Fig. 1). Similar pits are seen in the controls without any connection with the BAP (Fig. 2). However, the connective tissue under the BAP is several times thinner compared with the areas outside of them.

On the material treated by the Mallory's trichrome method on the experimental preparations we established a specific position of the collagen fibers (A, A) compared with the controls (B, B), as well as increased number of blood vessels (Figs. 3, 4).

Since BAP are not painful during puncture, we expected that free non capsulated receptors responsible for the sensing of the pain (A) would not be present in this part of the skin. There was no difference compared with the controls (B) (Figs. 5, 6).

## Discussion

Some authors have described the presence of pits in the area of BAP [8], but it is not typical only for them. Our opinion is that the smaller thickness of the epithelium is caused by the reduction of stratum corneum, and the thinner stratum papillare determines the thickness of the dermal connective tissue. Using trichrome coloring difference in the quantity and the position of the collagen fibers was observed, which added to the reduction of the stratum corneum could be the reason for the lower impedance at the BAP.

## Conclusions

1. Histomorphological differences between the BAP and the tissue areas around them are present.
2. The histological differences are mainly concentrated in stratum corneum of the epidermis, stratum papillare and in some measure in stratum reticulare of the derma.
3. Combined histological and physiological examination of a significant number of BAP, from most of the channels is needed to establish out of doubt the characteristics of the tissue elements in it, compared with areas without BAP.

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