Table 1: Correlation Coefficients for Different Individuals

SUBJECT / $\gamma_{X,Y}$	1 T.K. 29YRS	2 T.H. 33YRS	3 K.O. 36YRS	4 H.K. 38YRS	5 W.S. 26YRS	6 H.U. 39YRS	7 T.K. 29YRS	8 P.B. 35YRS	9 D.G. 25YRS	10 Y.K. 22YRS
$\gamma_{AP,BP}$	0.087	−0.093	0.228	−0.110	0.139	−0.028	0.171	0.299	0.309	−0.298
$\gamma_{AP,IQ}$	○ 0.385	0.338	0.085	0.367	◎ 0.627	◎ 0.581	○ 0.389	0.004	◎ 0.878	○ 0.411
$\gamma_{BP,IQ}$	◎ 0.480	○ 0.461	0.313	0.274	0.243	0.197	0.158	0.168	0.198	0.263
$\gamma_{Tan\phi/BP,AP}$	0.033	0.064	◎ −0.497	○ −0.413	○ −0.397	−0.348	−0.161	◎ −0.731	−0.150	◎ −0.522
$\gamma_{Tan\phi/BP,BP}$	−0.125	−0.248	0.013	0.121	0.312	− 0.06	−0.242	0.144	○ 0.419	0.073
$\gamma_{Tan\phi/BP,IQ}$	○ −0.382	◎ −0.627	−0.187	◎ −0.485	−0.370	◎ −0.751	◎ −0.531	◎ −0.847	◎ −0.695	◎ −0.831

$\gamma_{0.05}=0.374$ $\gamma_{0.01}=0.479$, $\gamma_{0.001}=0.588$; $\frac{Tan\phi}{BP}=\frac{1}{\tau}(\tau=CR=TC)$

(2) Where Does the Electrical Behavior of IQ, TC and AP Take Place in the Skin Structure?

As mentioned previously, IQ, TC and AP are all related to the polarization which take place both at the barrier membrane within the epidermis and also at the basal membrane. These are all electrical phenomena which occur within the epidermis when an external voltage is applied.

It might be supposed from this that there should be a strong correlation between these three above-mentioned parameters. When the correlation coefficients of the BP, AP, TC and IQ were calculated for the 28 meridians of 10 subjects (right side and left side; Table 1), no significant correlation between the BP and IQ, BP and TC, and BP and AP was found. Between BP and AP there was no correlation in 10 out of 10 subjects, between BP and TC one out of the 10 subjects had a 5% negative correlation, and between IQ and BP only 2 subjects out of the 10 had a significant correlation (1% and 5% respectively).

On the other hand, a high correlation of 5% ~ 0.1% was found between AP, TC, and IQ for 5 ~ 8 subjects out of the 10. Between IQ and TC, 8 of the 10 subjects showed a positive correlation. This indicates that, when the total number of ions is large, the time consumed for the transfer of ions is longer, while when the total number of ions is small, the transfer time is short.

Between AP and TC, 5 out of the 10 subjects showed a positive correlation. This means that the AP increases when the capacitance (which occurs on both sides of the barrier membranes), the epidermal internal resistance and the polarization resistance of the barrier membrane increase. When the

capacitance and resistance decrease, the AP also decreases.

However it does not seem plausible that AP could also increase when the polarization capacitance, the epidermal internal resistance, as well as the polarization resistance, all increase. It can be assumed that in order for the AP to become larger, either the epidermal internal resistance must increase or the polarization resistance must increase, while the other must remain unchanged or decrease. Then which one of these two resistances mentioned becomes larger? Since the polarization capacitance increases, it naturally follows that the polarization resistance increases. It can then be supposed that many of the ions that are accumulating on both sides of the barrier membranes are not permeating the membrane but mainly transferring to the site of electrodes having opposite polarities in the epidermis. Therefore AP can be considered to be an ion flow that passes within the epidermis.

Next, when the TC is small, that is, when the polarization capacitance, the polarization resistance and the epidermal internal resistance are small, the AP necessarily should also be small. How can this be interpreted? When the capacitance is small and the polarization resistance and epidermal internal resistance are also small, the ions more easily pass through the epidermal layer and penetrate the dermis. Therefore it seems that the AP current, due to the application of an external voltage, should increase. However, the reason the AP actually decreases instead can be explained if we assume that the total number of ions involved is small.

In either case, although the AP current passes to some extent in both the epidermis and the dermis, it seems likely that it travels mainly in the epidermal layers.

A positive correlation was observed between IQ and AP in 6 out of the 10 subjects. The AP is large when the total number of ions that accumulate on both sides of the two barrier membranes is large, that is, when the polarization capacitance and polarization resistance are large. A small AP is recorded when the total number of ions accumulating on both sides of the barrier membrane is small.

This indication matches the assumption made earlier concerning the correlation between AP and TC. Therefore the assumption made in explaining the positive correlations between AP and TC and also between IQ and TC is thought to be correct. That is, when the total number of ions accumulating on both sides of the barrier membranes (IQ) is large, the polarization capacitance (C) and the polarization resistance (R) are large. Therefore, CR=TC is larger, and the AP value is large as well.