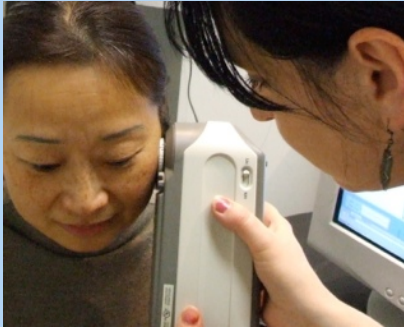
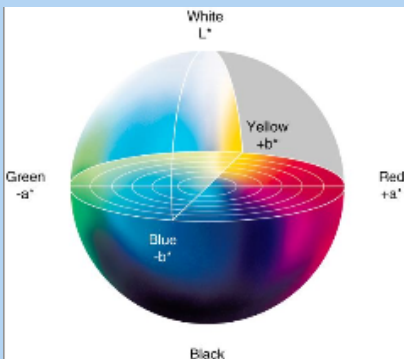




## STEPS



### 1. MEASUREMENT



### 2. L\*A\*B\* COLOUR SPACE



### 3. VISUAL CHANGE



## Skin Lightening

### Spectrophotometer measurement of skin colour change together with Photographic Support Supportable Claims

- Visual signs of Ageing
- Eliminate sun spots, age spots and discoloration
- Repair visible sun and photo-ageing damage
- Helps fade dark, age and liver spots
- Evens skin tone and color
- Depigmentation factor

### Measurement

Age spots and blotches contribute to the unevenness of skin associated with ageing. The consumer's expectation is the reduction in skin colouration of overly pigmented areas and the most appropriate measurement is associated with defining colour change. For this purpose, a chromameter is used. The instrument works by projecting tri-stimulus light (similar to an overhead projector) and recording the colour values into an interpretable scale – L\*a\*b\*. These values are arrived from the C.I.E. standardised three dimensional colour space model, where L\* is the “grey” scale i.e. whiteness -blackness, a\* is the redness - greenness value and b\* is the yellowness - blueness. This is not dissimilar to the wheel for colour selection in computer software such as Microsoft Word.

The L\* value represents the Lightening (clarity) measurement but it is modified by the a\* and b\* values according to skin type as seen in the background colour of an adjoining non-pigmented skin area. In general L\* decreases whilst blueness b\* and redness a\* increase with chronological age(2)

These types of studies can be supported by high resolution photography, which serves to support the visualisation of change. The slow acting nature of non-therapeutic formulations usually means that a study over 4, 8 or 12 weeks will be needed in order to show statistically significant change. The preferred season for performing the testing is the Northern or Southern hemisphere Winter, where actinic light is at its lowest. This gives the best opportunity to make the measurements without the interference of suntan which will cause changes to the colour of the background unpigmented reference skin areas.

### Assessment of Change

Change can be quantified as numerical change e.g.  $\Delta E$  or to express percentage over time, e.g. “90% of users showed more than 55% reduction in intensity of deeply pigmented spots after 60 days use.”

### References

1. Nava D. Skin Ageing Handbook :An Integrated Approach to Biochemistry and Product Development William Andrew 2008
2. Jemec G.B.E., Serup J. Handbook of Non-Invasive Methods and the Skin 1995 p385 -395.

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