THE CYTOGENETIC EFFECTS OF SOME COMMONLY USED FACE CREAMS

BY

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DECLARATION

I hereby declare that the contents of this Thesis is my original work and has not been presented for a degree in any other University.

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This Thesis has been submitted for examination with our approval as University supervisors.

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ABSTRACT

The commercial face creams Venus de Milo, Glotone Ambi, Snowfire and Clearasil and the traditional cosmetic Castor oil are widely used in Kenya. In this study the toxicological effects of these cosmetics were studied using Vicia faba root -tip meristematic cells and baker's yeast, Saccharomyces cerevisiae strains D^7 and rad 1-1.

In Vicia faba these cosmetics induce a dose-dependent reduction of mitotic figures, anaphase bridges and premature chromosome condensation. All these effects were detected within the concentration range of 0.0625% and 4.0% in doubling dose. The spindle is responsible for the pulling apart of nuclear masses to the opposite poles of the cell during mitosis before the daughter cells separate. Since this was evident, these cosmetics did not cause disfunctioning of the spindle. Recovery of anaphase bridges and condensed metaphases (what happens after treatment, washing off the test agent and replanting) was accompanied by both severed and intact bridges and fragments. In V. faba a slow increase in induction of bridges was condensed metaphases at low doses was apparent. This was followed by a rapid increase at mid doses (0.5% - 1.0%) and then a reduction and tailing off at the higher doses (2.0% - 4.0%). Castor oil though from a plant induces the same effects (anaphase bridges and condensed metaphases) as the commercial face creams and in a similar manner.

Analysis of variance on the effect of the dose of these cosmetics and the duration of treatment indicates a significant induction of anaphase bridges and condensed metaphases.

A dose-dependent killing effect on both strains of S. cerevisiae was apparent as evidenced by the decrease in number of surviving colonies with increasing concentration of the cosmetics. The increase in reversion in rad 1-1, reversion, conversion and co-conversion/reversion in D^7 was evident after treatment. There was no evidence of induction of recombinants at the ade locus of yeast strain D^7 by any of the cosmetics. Here again Castor oil behaves in a similar manner to the commercial face creams in the induction of these effects. A slow increase in the induction of reversions and conversions at low doses (0.5 - 1.0%) and a rapid increase at mid doses (1.0-2.0%) was observed. Reduction and tailing off at higher doses was apparent.

The analysis of variance indicates that these cosmetics induce a significant level of reversions and conversions in yeast.

These results indicate that there is need for concerted efforts in the assessment of risk posed by use of these cosmetics and the search for safer alternatives.