Effects of a herbal remedy (CATAR) on human cataract lenses: observations from a preliminary experimental study

Dear Sir,

One of the major causes of blindness among elderly Zimbabweans is a cataract. Currently, the major form of treatment for this condition is surgical. Unfortunately, the cheap intra-capsular technique that is routinely used in Zimbabwe is inferior to the extra-capsular technique and its use is limited by the shortage of material and human resources. In addition, most elderly people who have their lenses removed by the intra-capsular extraction technique are either indiscriminately given spectacles (if they are available) or they lose the spectacles. Furthermore, their default rate is very high.[1] Therefore, it would appear that if the main approach to the treatment of cataracts remains surgical, then there will always be an ever increasing number of cataract blindness among Zimbabweans.

Pharmacotherapy for the treatment of cataracts has been tried in other countries.[2,3] However, in Zimbabwe, there has been no organized study to determine the effects of herbal remedies in the treatment of cataracts or in the prevention of cataract blindness. These remedies are locally available and may go a long way in reducing cataract blindness among Zimbabweans.

Therefore, the primary purpose of this study was to carry out a preliminary investigation into the *in vitro* effects of a herbal remedy code-named CATAR on human cataract lenses.

Twelve lenses that had been extracted from adult black Zimbabweans who had impaired vision secondary to cataracts at the Sekuru Kaguvi Eye Unit, Parirenyatwa Hospital, Mazowe Street, Harare, Zimbabwe were made available to the Department of Anatomy, University of Zimbabwe, Harare, Zimbabwe. Initially, all the lenses were bathed in physiological saline for about 24 hours before being photographed. Each lens was then cut into two halves, one for the experimental and one for the control group. Each lens half was kept in a separate labelled 5ml glass container so that after the experiment it could be matched to its other half. Of note was that one lens was fragmented during dissection of the lenses (Figure Ia).

Each lens half in the experimental group was bathed for a period of two weeks in 3mls of the distillate prepared from the powder of the herbal remedy (CATAR) before being fixed in 10% formalin for another two weeks. Each lens half for the control group was only fixed in 10% formalin for a period of two weeks. During the course of the experiment, the glass containers with the lens halves for the experimental and control groups were kept on a vibrator. After fixation in 10% formalin, the two halves of each lens were brought together and then photographed. A small piece of the lens (1 to 2mm thick) was cut from the

Figure Ia: Shows cataract lens before the experiment.

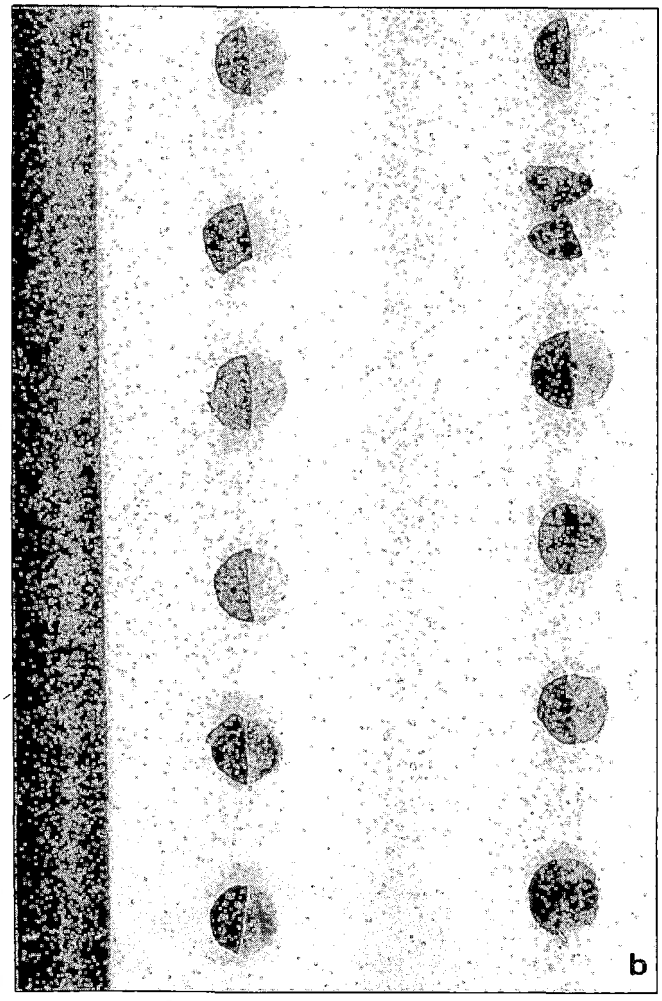
medial aspect of each lens half and was processed for both routine histological sectioning at 5mm thickness with a Rotary microtome and staining with haematoxylin and eosin. Photographs of the histological slides prepared were taken.

The colour of the lens halves treated with the distillate of the herbal remedy (CATAR) changed from straw to purple and then brown once the lenses were removed from the distillate and exposed to air (Figure Ib). The histology sections of the paired lens halves showed that there was a concentric pattern of lens fibres in 10 out of 11 (91%) of the lens halves of the experimental group.

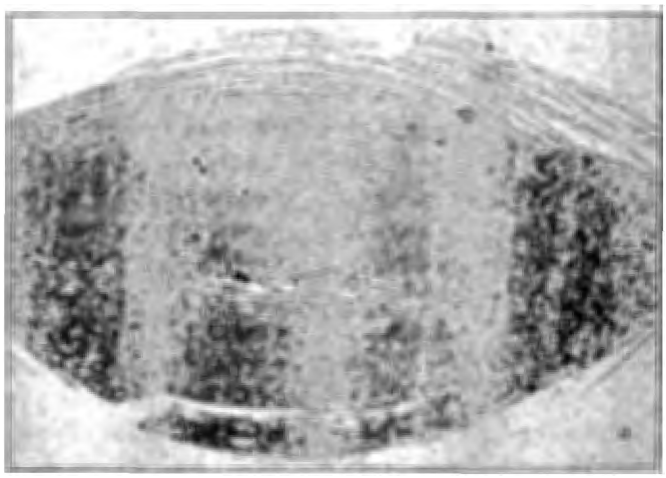
In the entire lens halves of the control group the fibres at the centre of the lens were fragmented and collapsed (Figures IIa and b). In one pair of lens halves, the histological structure of the control lens half as described above was similar to that of the experimental lens half. Of note was that the histological sectioning of the lens halves in the control group was difficult because the lenses were hard while it was easy for the lenses in the experimental group because the lenses were soft (Figures IIa and b).

The colouring and softening effects of the herbal remedy (CATAR) on the lens and its preservation of the concentric

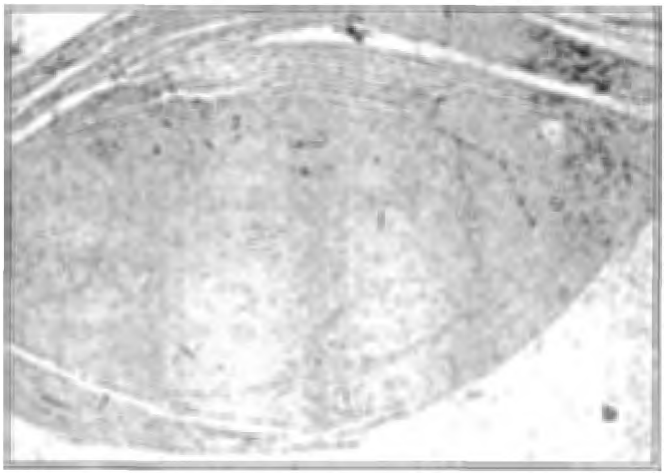
Figure Ib : Shows cataract lens halves after treatment with the herbal remedy (CATAR). The left lens halves of the experimental group have changed colour.



Figures IIa: Photograph of a histological section of an experimental cataract lens half (H&E X7).



Figures IIb: Photograph of a histological section of a control cataract lens half (H&E X7).



pattern of lens fibres in the lens halves of the experimental group compared to those of the control group appear to be important in the treatment of patients with impaired vision. However, the failure of this compound to produce the concentric pattern in one pair of lens halves suggests that its effects may differ in cataract lenses of different categories. Therefore, there is a need to conduct both an *in vitro* study to assess the effect of the herbal remedy (CATAR) on cataracts of different categories (for example early and mature cataracts) and also an *in vivo* experimental study to assess further the effects of this compound on experimental cataracts.

Furthermore, the ability of this compound to be able to soften a hard tissue such as a cataract lens suggests that it may also have a role to play as one of the histological softeners of hard tissue. This area also demands further study.

References

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