Warburgia ugandensis – Bioassay of different plant parts concerning the antimicrobial activity

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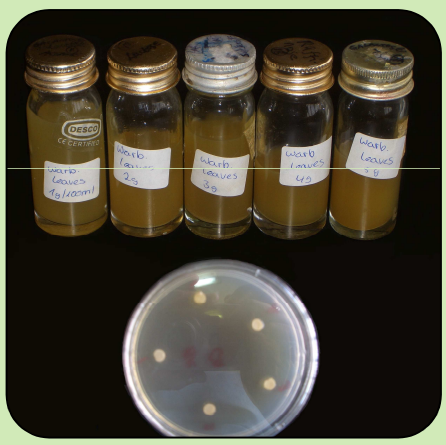
Introduction

Warburgia tree with removed bark
Source:http://www.metafro.be

- The bark of *Warburgia ugandensis* is widely used as a herbal medicine in Kenya and Africa
- Stem bark powder is known to be active against microbes (Olila et al., 2001a+b, Wube et al., 2005)
- The bark is stripped off the tree, which injures or kills the tree (Botha et al., 2004)

⇒ **Can bark be replaced to make the utilization more sustainable?**

Methods



- In 2010 we conducted bioassay studies in JKUAT, Kenya
- Tested plant parts: bark, fruit, leaves, roots
- Tested micro-organisms (MO): *Pseudomonas aeruginosa, Staphyloccocus, aureus, Bacillus subtilis, Escherichia coli, Candida albicans*
- Crude extracts from grounded powder of different concentrations: 1,2,3,4 and 5 g per 100 ml
- Filter discs with extracts were placed on agar plates, inoculated with the MO and incubated 23 h at 37℃
- Diameter of the inhibition zones were taken

Results

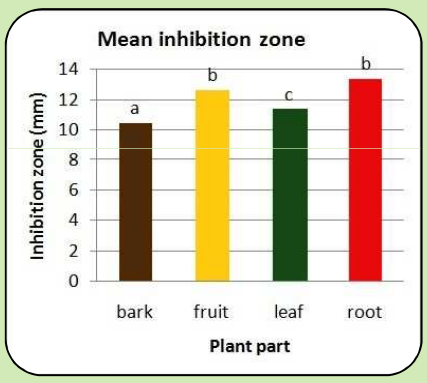


Figure 1: Mean inhibition zone (in mm) for the plant parts as mean value over all dilutions, significance level here is p<0.01

- The average inhibition zone of leaves, fruits and roots were larger than the inhibition zone of bark (Figure 1)
- Inhibition zones were not always increasing with increasing concentration (Figure 2)

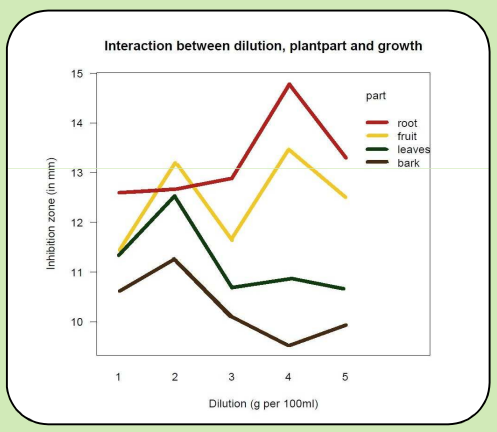


Figure 2: Inhibition zone (in mm) of all parts and the different dilutions

Conclusions

- Herbalists should be encouraged to use leaves and fruits which are more sustainable
- Some herbalists in South Africa already use leaves effectively (Botha et al., 2004)
- Concentration of 2g/100ml is most effective for the tested microbes
- This tree should be promoted for agroforestry for conservation and sustainable utilization

References

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