

Plants consumed by chimpanzees in Taï National Park : assessment of nutritional and cancer inhibition potentials



Key Message:

The diet of chimpanzees may constitute an interesting source for finding new ways to control nutritional deficit and cancer development in human.

Cancer is the 3rd leading cause of mortality worldwide after cardiovascular and infectious diseases. Nowadays, strategies for controlling this disease are increasingly directed towards chemo-prevention through the use of natural resources. Chimpanzee is the closest animal to human with 98% of DNA in common. Therefore, they share several diseases to which they are tolerant. We explore this tolerance towards chronic diseases among which the cancer development inhibition.



Study Area : Western African, Taï, South-West Côte d'Ivoire

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Objectives

The objective of this study is to explore chimpanzees eating habits and behaviors towards self-medication to identify plants with strong nutritional and anticancer potential able to play a role in the control of diseases in humans.

Methodology

One hundred and thirty-two (132) extracts from 27 plant species consumed by chimpanzees in Taï National Park were tested for their anticancer activity on Hepa 1c1c7 and HEK-293/NF-κB-Luc cells respectively through quinone reductase induction and NF-κB inhibition tests. The nutrients (lipids, carbohydrates, proteins, fibers, Fe, Zn and Cu) content of the plants were determined by using known standard methods.

Results

Anticancer activity

Of the 132 tested extracts, 29 extracts induced quinone reductase with induction ratios higher or equal to 2 and cell viabilities higher or equal to 50 %. Six (6) extracts inhibited NF-κB with inhibition percentages and cell viabilities higher or equal to 50 % (Fig. 1).

Nutrient contents

Nutrient levels ranged from 0.39 to 8.86 g/100g dry matter for proteins, from 0.89 to 92.14 g/100g for lipids, from 5.22 to 42.08 g/100g for fibers and 22.70 to 83.20 g /100g for carbohydrates. The energy value provided by these plants varies between 300 and 800 Kcal/100g dry matter. Mineral content ranged from 0.2 to 3.5 mg/100g dry matter for copper, from 0.7 to 17.4 mg/100g for zinc and from 1.2 to 36.8 mg/100g for iron (Fig. 2).

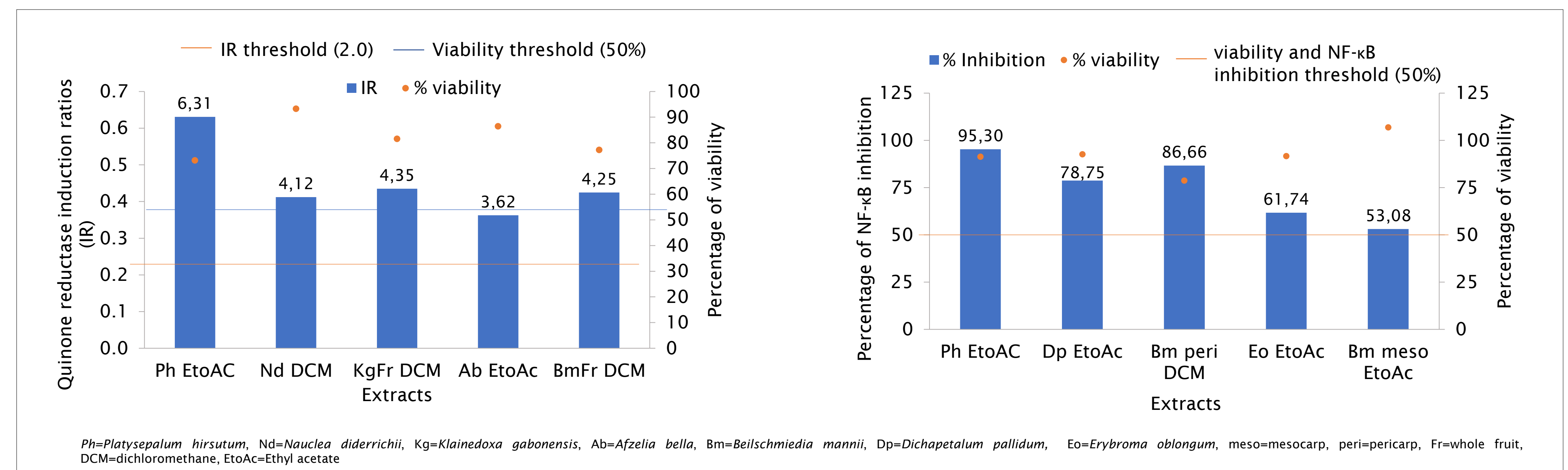


Figure 1: Quinone reductase induction and NF-κB inhibition activity of some plants consumed by chimpanzees

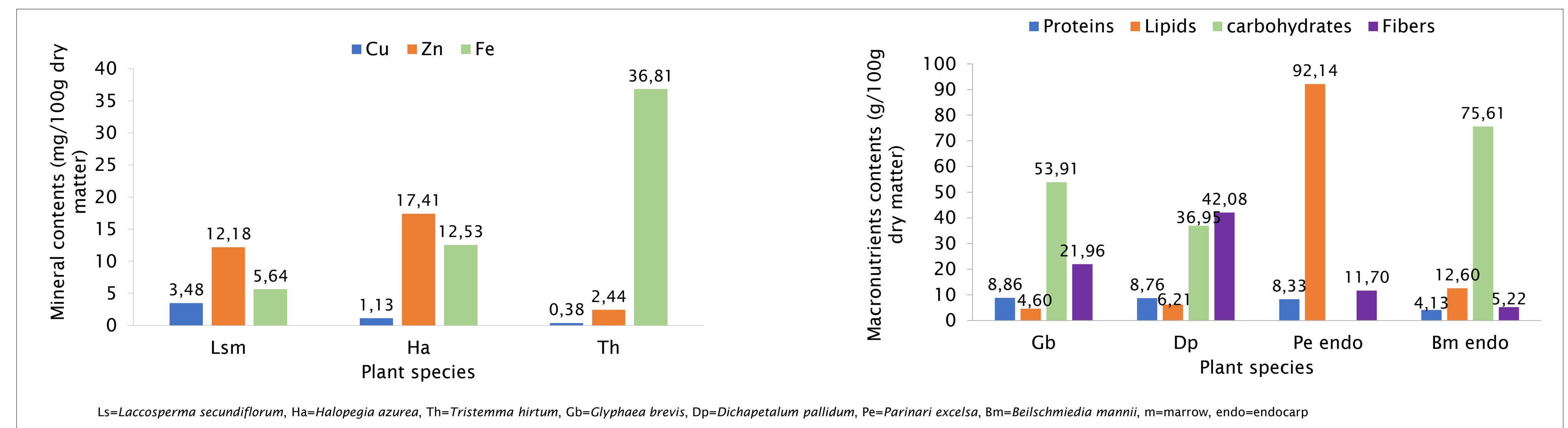


Figure 2: Nutrient contents of some plants consumed by chimpanzees

Conclusion

Plants consumed by chimpanzees possess strong anticancer and nutritional potential. The consumption of these plants would enable chimpanzees to fight or control certain pathologies and ensure their well-being. Therefore, they could be used for the development of traditional improved drugs or dietary supplements.