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## **Contributions to the quality control of two crops of economic importance : hops and yerba mate**

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## propositions

- 1 The *trans*-iso- $\alpha$ -acid molecule is included partially in  $\beta$ -CD: the hexenoyl chain and even probably the C<sub>5</sub> side chain are inside the hydrophobic cavity while the C-3 and C-4 hydroxyls form H-bonds with the primary hydroxyls in the opening of the  $\beta$ -CD particle (this thesis).
- 2 Arbutin should be included in the monographs of *Ilex paraguariensis* as a negative marker since it is present in large amounts in most of the cogenerated species that are used as adulterants (this thesis)
- 3 Now that pure  $\alpha$ -acid and iso- $\alpha$ -acids are available, the quantitative analysis of individual bitter acids or iso- $\alpha$ -acids in hops, isomerised hop extracts and beer should be based on these reference compounds.
4. Herbal drug standardization should be based on holistic methods such as metabolomics in order to get a more realistic idea of their chemical composition and bioactive components (this thesis).
5. The extrapolation of the results of in-vitro assays to an in-vivo activity neglects bioavailability that in the case of plant products can be a very complex process.  
Halliwell B (2011). Free radicals and antioxidants - *quo vadis?* Trends in Pharmacological Science, 32, 3.
6. The reliability of studies on health affecting compounds in plant material depends, to begin with, on the choice of an extraction method that minimizes decomposition.  
Booth NL, Kruger CL, Wallace Hayes A, Clemens R (2012). An innovative approach to the safety evaluation of natural products: Cranberry (*Vaccinium macrocarpon* Aiton) leaf aqueous extract as a case study. Food and Chemical Toxicology. doi: [10.1016/j.fct.2012.03.075](https://doi.org/10.1016/j.fct.2012.03.075)
7. When the compound or compounds responsible for the therapeutic effect of a medicinal plant are not known, standardization of its extracts on some chemical markers makes no sense.

8. The discovery of the Hepatitis B Virus by Nobel Laureate Baruch Blumberg (1976) was through the application of an orderly, observant mind and is a successful early example of an 'omics' technology.

B S Blumberg, A I Sutnick, and W T London.(1968). Hepatitis and leukemia: their relation to Australia antigen. Bull N Y Acad Med. 44(12): 1566-1586.  
Baruch S., Blumberg et al. Vaccine against viral hepatitis and process. US Patent 3636191  
Issue date: 18 Jan 1972.

9. Given the traditional way of ingesting (hot or cold) mate in rounds sharing the same straw among several people, the absence of major breakouts of saliva transmitted diseases in Argentina, means that there have to be some efficient antiseptic compounds in Yerba mate.
10. Successful sportsmen and sportswomen receive high compensations as a way of participation in the wealth they create; the same logic should be applied to successful scientists to increase the interest to study science.
11. The wealth created by the interaction of people of the most diverse cultures and backgrounds is due to the challenge of having to explain established values and structures we have never questioned.
12. Hypocrisy is a more damaging feature than corruption in the relationship between rich and poor countries.