

## Triterpenes and Saponins from *Ilex argentina* Leaves \*

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**SUMMARY.** From *Ilex argentina* Lillo leaves, a species reported as substitute or adulterant of the genuine erva-maté (*Ilex paraguariensis* A. St.-Hil.), two saponins and one triterpene have been isolated. By means of spectroscopic methods, this latter was identified as rotundic acid and the saponins as the 28-O- $\beta$ -D-glucopyranosylester of rotundic acid (pedunculósido) and the 20(S) isomer of 28-O- $\beta$ -D-glucopyranosylester of rotundioic acid.

**RESUMEN.** "Triterpenos y saponinas de las hojas de *Ilex argentina* Lillo". *Ilex argentina* es una de las especies que ha sido mencionada como adulterante o sustituto de la yerba mate verdadera (*I. paraguariensis*). De las hojas fueron aisladas dos saponinas y un triterpeno y sus estructuras químicas elucidadas a través de métodos espectroscópicos. El triterpeno fue identificado como el ácido rotúndico y las saponinas como el éster 28-O- $\beta$ -D-glucopiranosido del ácido rotúndico (pedunculósido) y el isómero 20(S) del éster 28-O- $\beta$ -D-glucopiranosido del ácido rotundioico.

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### INTRODUCTION

*Ilex argentina* Lillo is one of the species reported as adulterant or substitute of the genuine maté <sup>1</sup> (*Ilex paraguariensis* A. St.-Hil.). *I. argentina*'s vegetative morphology is alike the one of the true erva-mate tree, so that it can be easily confused with *I. paraguariensis*, and it also receives one of its common names -"palo-de-yerba"- due to such resemblance. Historically, a Jesuit priest seems to have been the first to note the occurrence of "yerba mate" (very probable *Ilex argentina*) at the subtropical rainforests close to Tucumán, Northwestern Argentina, about 1750. He also reported that such Tucumán's trees yielded a "yerba mate" not only with different taste that the one coming from Paraguay, but that it also caused headache <sup>2</sup>. Additionally, in 1844, the governor of the Salta province authorized wild "yerba mate" harvest

in this territory for an eight year period <sup>3</sup>. However, no one in those days was able to differentiate *Ilex argentina*'s products from the genuine yerba mate, in spite that the problem of the bad quality of Northwestern Argentinian "yerba mate" seems to have already arisen. A few years later, Moussy <sup>4</sup> (1860) reported the occurrence of "*Ilex mate*" (botanically a synonym of *Ilex paraguariensis* A. St.-Hil.) for the San Francisco and Orán valleys, Salta (Northwestern Argentina). Actually, there is little doubt that *Ilex mate* was in fact *I. argentina*. Since 1936, Argentinian sanitary legislation forbids the industrialization of adulterants, among them alternative *Ilex* species, for the preparation of genuine yerba mate.

During the course of a large program aimed to identify the adulteration of maté by other *Ilex* species, the systematic identification of the

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