Antiproliferative activity of various
Uncaria tomentosa preparations on HL-60 promyelocytic leukemia cells

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Abstract:
The woody Amazonian vine Uncaria tomentosa (cat’s claw) has been recently more and more popular all over the world as an immunomodulatory, anti-inflammatory and anti-cancer remedy. This study investigates anti-proliferative potency of several cat’s claw preparations with different quantitative and qualitative alkaloid contents on HL-60 acute promyelocytic human cells by applying trypan blue exclusion and 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide reduction assay (MTT). By standardization and statistical comparison of the obtained results pteropodine and isomitraphylline are indicated to be most suitable for standardization of medical cat’s claw preparations.

Key words: Uncaria tomentosa, cat’s claw, oxindole alkaloids, cytotoxicity, HL-60, MTT

Abbreviations: B/W³¹ = Uncaria tomentosa bark extracted in water at 37°C, B/50E²² = bark extracted in 50% ethanol at 37°C, B/96E²² = bark extracted in 96% ethanol at 37°C, B/W⁵⁶ = bark extracted in boiling water, B/E⁵⁶ = bark extracted in boiling ethanol, B/S⁶⁵ = bark alkaloid-rich preparation, L/E⁶⁶ = leaves extracted in boiling ethanol

Introduction

Uncaria tomentosa (Willdenow ex Roemer & Schultes) De Candolle is a large woody vine indigenous to a number of central and South American countries [6]. This species, also known as “una de gato” or “cat’s claw”, is widely used in folk healing as an immunomodulatory, anti-cancer and anti-inflammatory remedy. The list of treated diseases includes, for instance, gastric ulcers, diarrhoea, gonorrhoea, arthritis and rheumatism, acne, diseases of the urinary tract and cancers. The most often method of cat’s claw medical administration is drinking its decoctions prepared through boiling in water or by macerating its bark in alcohol [8].

Numerous investigations have been carried out to isolate and determine secondary metabolites of this plant [4]. So far, over fifty identified compounds have already been reported, including oxindole alkaloids (speciophylline, mitraphylline, uncarine F, pteropodine, isomitraphylline, uncarine E), ursane type pentacyclic triterpenes with a variety of ursolic acid derivatives, quinic acid and quinonic acid glycosides, phenolic tannins like kaempferol and dihydrokaempferol, sterols and procyanidins [1, 7, 20, 25]. These compounds