

The profile of metabolites of ellagitannins in the context of insomnia occurrence in peri- and postmenopausal women. Preliminary cross-sectional study

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BACKGROUND: Insomnia is the most common sleep disorder in women. Many metabolic processes are involved in sleep regulation and depend on the nutritional status, suggesting a link between diet and sleep¹. Over the past decade, there has been an increased interest in the analysis of ellagitannins - a group of polyphenols, whose metabolites involve ellagic acid (EA) and urolithins (Uros). Uros are microbial-derived metabolites with high bioavailability, blood-brain barrier permeability, and documented antioxidant, anti-inflammatory, and neuroprotective properties². The analysis of Uros has not yet been the subject of research in the context of insomnia, which shows attractive research perspectives.

OBJECTIVES: This preliminary study aimed to evaluate the associations between urine metabolites of ellagitannins and insomnia occurrence among peri- and postmenopausal women.

METHODS: This preliminary cross-sectional study involved 82 women aged 50-72, including 38 women with insomnia (Fig. 1). Due to the direct impact on insomnia, the exclusion criteria for the study included neurological and psychiatric diseases. The occurrence of insomnia was assessed using the five-point WHIRS scale (Women's Health Initiative Insomnia Rating Scale)³. The profile of ellagitannins metabolites in urine was analysed using the LC-MS technique.

RESULTS: Three ellagitannin metabolites were identified in all urine samples (mean concentration): EA (12.6 nM), Uros C (2.8 nM), and Uros D (7.9 nM). Women without insomnia had slightly but significantly higher Uros C concentrations compared to women with insomnia (3.0 vs. 2.5 nM; $p=0.0470$; Fig. 1). Uros A (1.3 nM) and B (1.0 nM) were identified in 80% and 14% women without insomnia and 74% and 8% women with insomnia, respectively.

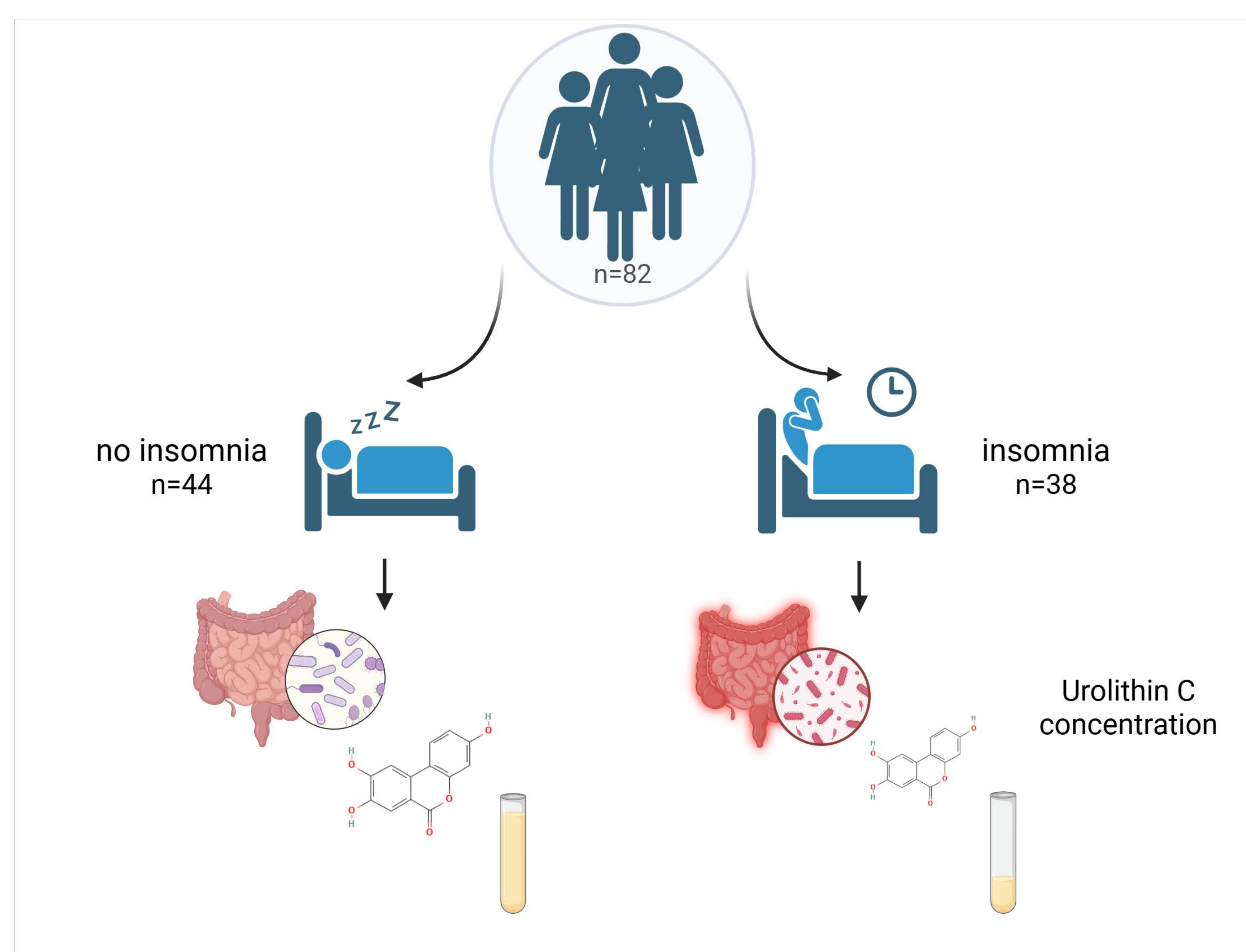


Figure 1. Summary of the results of the assessment of the associations between ellagitannin metabolite profile and the occurrence of insomnia in peri- and postmenopausal women.

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CONCLUSIONS: The obtained findings are promising preliminary data to design prospective study involved diet and microbiome analyses to confirm the inverse association between Uros C concentration and insomnia occurrence and explain the mechanisms underlying them.

Conflicts of interest: none.

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References:

¹Binks et al., Nutrients 2020; ²Zhao et al. Mediators Inflamm. 2020; ³Hery et al. Sleep Health. 2020.