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Studies on oxidized resveratrol metabolite mixtures

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Resveratrol is a well-known polyphenol with a plethora of pharmacological activities [1,2]. Due to its chemical structure, resveratrol may directly scavenge reactive oxygen and nitrogen species. In living systems, this can lead to the generation of a wide range of new metabolites with altered bioactivities [3].

The aim of our studies is to evaluate the potential biological relevance of this phenomenon. The oxidation of resveratrol through various chemical reactions, including biomimetic approaches, resulted in mixtures that exhibited greater bioactivities compared to the parent compound. Mixtures were tested for *in vitro* DPPH and ORAC antioxidant activities, and inhibitory action on lipoxygenase, xanthine oxidase, acetylcholinesterase and angiotensin converting enzymes. Based on chromatographic fingerprint and chemical diversity, promising mixtures were selected for activity-guided isolation.

To this end, isolation of constituents from the bioactive oxidized resveratrol mixtures afforded 31 compounds in pure form, which are currently being investigated for antioxidant and enzyme inhibitory bioactivities. Their structure elucidation is mostly ongoing, and several resveratrol dimers are assumed based on preliminary data.

In conclusion, the oxidation of resveratrol led to the formation of new metabolites that showed greater inhibitory activities to several enzymes of significant clinical importance when compared to the parent compound.

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