



## Safety Assessment of Leaves Extracts of *Vitis Labrusca* and *Vitis Vinifera* L. using Zebrafish Embryo Toxicity Test

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**Introduction:** The cultivation of *Vitis* (Vitaceae) grape varieties is one of the most important economic activities in agribusiness in Brazil; especially in Rio Grande do Sul. Waste byproducts generated by the grape industry such as leaves have no destination [1]. In this sense, our research group has been working with leaves extracts of *Vitis Labrusca* and *Vitis Vinifera* L. varieties [2]. Considering that this extracts demonstrated potential pharmacological results, is important to investigate its toxicity. For toxicological screenings, zebrafish has been emerged as a powerful tool. The main advantage of using this alternative model in toxicity studies is the replacement and reduction of more laborious and expensive mammals [3]. In this context, the objective of this work was the investigation of toxicity parameters of aqueous extracts of *Vitis Labrusca* (Niagara rosada) and *Vitis vinifera* (Cabernet sauvignon) leaves using zebrafish as in vivo model. **Methods:** The Zebrafish Embryo Toxicity Test was conducted as established by OECD (Organisation for Economic Co-operation and Development) [4] using zebrafish embryo (*Danio rerio*) of heterogeneous “wild type” (short-fin phenotype). The parameters observed were: (i) coagulation of fertilized eggs, (ii) somite formation, (iii) tail development, and (iv) number of heartbeat per minute. Aqueous extracts of Niagara rosada and Cabernet sauvignon leaves were analyzed in a wide range of concentration (50-2000 µg/ml) until 96 hours pos-fertilization (hpf). **Results and Conclusions:** For aqueous extract of Niagara rosada leaves, in 24hpf we observed a significant reduction in heartbeat/min and lack of somite formation using concentration of 2000 µg/ml. After 48hpf, eggs were coagulated from concentration of 1000 µg/ml, being the lethal dose of 50% (LD<sub>50</sub>)<sub>96hpf</sub> = 466.17 ± 5.02. On the other hand, aqueous extract of Cabernet sauvignon leaves showed higher toxicity, because in 24hpf was observed coagulation of embryos treated with 2000 µg/ml of the extract. In 48hpf, we verify mortality of embryos from concentration of 1000 µg/ml and for 500 µg/ml, a reduction in heartbeat/min and an abnormal development of tail. The LD<sub>50</sub> in 96hpf obtained for aqueous extract of Cabernet sauvignon leaves was 325.81 ± 4.01 µg/ml. Both varieties present as major compound quercetin-3-*O*-glucuronide and also; rutin, quercetin-3-*O*-galactoside, quercetin-3-*O*-glucosid and *trans*-caftaric acid. However, anthocyanins are present only for Cabernet sauvignon. In summary, it was possible to conclude that anthocyanins can contribute significantly for toxicity of aqueous extracts of *Vitis* leaves.

### References:

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