THE EFFECTS OF ELLAGITANNIN-RICH EXTRACTS AND ELLAGIC ACID ON HYDROGEN PEROXIDE PRODUCTION BY MACROPHAGES AND ON THEIR VIABILITY

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MATERIALS AND METHODS

HOMOGENIZED RASPBERRY FRUITS AND MARC WERE EXTRACTED WITH 60% METHANOL, FILTERED AND DRIED IN A ROTARY VACUUM DRIODATOR AND LATER ON IN A FREEZE DRYER. THE TOTAL PHENOLIC CONTENT (TPC) OF THE EXTRACT WAS DETERMINED WITH FOUR-COLOURED REAGENT, USING GALIC ACID AS A STANDARD. THE ANTIOXIDANT ACTIVITY WAS DETERMINED BY DPPH RADICAL SCANNING assay (2) AND EXPRESSED AS TROLOX EQUIVALENT ANTI-OXIDANT CAPACITY (TEAC). THE pH DIFFERENTIAL METHOD WAS USED FOR ANTI-OXIDANT DETERMINATION. ELLAGITANNINS WERE QUANTIFIED AS ELLAGIC ACID EQUIVALENTS AFTER ACID HYDROLYSIS OF THE EXTRACTS, FREE ELLAGIC ACID WAS ANALYZED IN NON-HOMOGENIZED SAMPLES. ELLAGITANNINS AND THEIR DERIVATIVES WERE DETERMINED BY RP-HPLC (3). MEASUREMENT OF HYDROGEN PEROXIDE WAS PERFORMED USING MACROPHAGE CULTURE (10^6 UNITS) STIMULATED WITH ARA AND PMA, HOMOGENIZED WITH OR WITHOUT ADDED RASPBERRY FRUITS EXTRACT AND ELLAGIC ACID. MACROPHAGE VIABILITY WAS EVALUATED USING TERYL BLUE TEST.

CONCLUSIONS
THE MODE OF ACTION OF RASPBERRY EXTRACT DEPENDS NOT ONLY ON CONCENTRATION BUT ALSO ON THE MECHANISM THAT TRIGGER THE ACTIVATION OF NAPHTHOCHROME. RASPBERRY EXTRACTS MAY ACT DIFFERENTLY ON PATHWAYS IMPACTED INFLAMMATION.

| RESULTS AND DISCUSSION |

TABLE 1. PHENOLIC COMPOSITION AND ORAL ADVICE OF RASPBERRY FRUIT AND MARC EXTRACTS

<table>
<thead>
<tr>
<th>Extract</th>
<th>Percent of the extract</th>
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<tr>
<td>RASPBERRY FRUITS</td>
<td>0,30±0,01</td>
</tr>
<tr>
<td>RASPBERRY MARC</td>
<td>0,50±0,00</td>
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FIG. 2. THE EFFECT OF RASPBERRY FRUIT AND MARC EXTRACTS ON HYDROGEN PEROXIDE PRODUCTION (nmol), WHEN ITS MACROPHAGES WERE STIMULATED WITH ARA OR PMA; EXPRESSED AS MEANS (µg/mL) ± (SEM). STATISTICAL SIGNIFICANCE IS BASED ON THE DIFFERENCE WHEN COMPARED WITH THE CONTROL (µg/mL). P<0.05, **P<0.01, ***P<0.001.

FIG. 3. THE EFFECT OF RASPBERRY FRUIT AND MARC EXTRACTS ON HYDROGEN PEROXIDE PRODUCTION (nmol), WHEN ITS MACROPHAGES WERE STIMULATED WITH ARA, EXPRESSED AS MEANS (µg/mL) ± (SEM). STATISTICAL SIGNIFICANCE IS BASED ON THE DIFFERENCE WHEN COMPARED WITH THE CONTROL (µg/mL). P<0.05, **P<0.01, ***P<0.001.

FIG. 4. THE EFFECT OF ELLAGIC ACID ON ITS MACROPHAGE CELL VIABILITY, EXPRESSED AS MEANS (µg/mL) ± (SEM). STATISTICAL SIGNIFICANCE IS BASED ON THE DIFFERENCE WHEN COMPARED WITH THE CONTROL (µg/mL). P<0.05, **P<0.01, ***P<0.001.

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REFERENCES

