PROTECTIVE EFFECTS INDUCED BY MOMAST(®) HY100 AND MOMAST(®) HP30 IN RAT ISOLATED TISSUES CHALLENGED WITH LPS

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Introduction: Beneficial properties of olive tree (Olea europaea) polyphenols are well known, with particular focus on their antioxidant activity. MOMAST(®) HY100 and MOMAST(®) HP30 (Bioenutra, Ginosa, TA, Italy) are polyphenolic liquid complexes from olive pressing juice with a total polyphenolic content of 100 g/kg (at least 50% as Hydroxytyrosol) and 36g/kg (at least 30% as Hydroxytyrosol), respectively. In the present study we investigated the potential protective role of MOMAST(®) HY100 and MOMAST(®) HP30 on isolated rat colon, liver, heart and prefrontal cortex specimens treated with lipopolysaccaride (LPS), a validated *ex vivo* model of inflammation. Particularly, we evaluated the effects of MOMAST(®) HY100 and MOMAST(®) HP30 on LPS-induced production of prostaglandin $(PG)_{E2}$, 8-iso-$PGF_{2\alpha}$, lactate dehydrogenase (LDH), as well as cyclooxygenase (COX)-2, tumor necrosis factor alpha (TNFα) and inducible nitric oxide synthase (iNOS) mRNA levels.

Material and methods: Male adult Sprague-Dawley rats (200-250 g) were sacrificed and colon, liver, heart and prefrontal cortex specimens were immediately collected and maintained in a humidified incubator with 5% CO_2at 37°C for 4h, in RPMI buffer with added bacterial LPS (10 μg/mL) (incubation period). During the incubation period, tissues were treated with vehicle or MOMAST(®) HY100 (5, 25, 50 μg/ml) and MOMAST(®) HP30 (5, 25, 50 μg/ml). Tissue supernatants were collected for mesuring PGE_2, 8-iso-$PGF_{2\alpha}$and LDH levels. In addition, COX-2, TNFα and iNOS gene expression in individual tissue specimens were evaluated by real-time reverse transcription polymerase chain reaction.

Result: Compared to LPS, MOMAST(®) HY100 decreased $PGE_2$and LDH levels in colon, liver, heart and prefrontal cortex tissues. In addition, we found a significant reduction of iNOS, in prefrontal cortex and heart, COX-2and TNFα mRNA levels, in heart, and 8-iso-$PGF_{2\alpha}$ levels in liver, following treatment with MOMAST(®) HY100. On the other hand, MOMAST(®) HP30 was found to blunt COX-2, TNFα and iNOS mRNA levels, as well as 8-iso-PGF2α in cortex, liver and colon. MOMAST(®) HP30 was also found to decrease PGE_2levels in liver, while it decreased iNOS mRNA levels, LDH and 8-iso-$PGF_{2\alpha}$ in heart.

Discussion and conclusion: Both MOMAST(®) HY100 and MOMAST(®) HP30 exhibited protective effects on multiple inflammatory and oxidative stress pathways, MOMAST(®) HP30 displayed a better anti-inflammatory and antioxidant profile.