**Supplementary file 1 - Table X.A. Layout of GeneQuerry™ qPCR Array inflammation plate**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** |
| **A** | *β-actin* | GCSF | GM-CSF | ICAM-1 | IFN-γ | I-309 | *β-actin* | GCSF | GM-CSF | ICAM-1 | IFN-γ | I-309 |
| **B** | *GAPDH* | IL-12 p40 | IL-12 p70 | MCP-2 | M-CSF | MIG | *GAPDH* | IL-12 p40 | IL-12 p70 | MCP-2 | M-CSF | MIG |
| **C** | *LHDA* | EOTAXIN | EOTAXIN-2 | IL-1b | IL-2 | IL-3 | *LHDA* | EOTAXIN | EOTAXIN-2 | IL-1b | IL-2 | IL-3 |
| **D** | *NONO* | IL-16 | IL-17 | IP-10 | MCP-1 | RANTES | *NONO* | IL-16 | IL-17 | IP-10 | MCP-1 | RANTES |
| **E** | *PPIH* | IL-1α | IL-7 | IL-8 | IL-10 | IL-11 | *PPIH* | IL-1α | IL-7 | IL-8 | IL-10 | IL-11 |
| **F** | *GDC* | MIP-1α | MIP-1β | MIP-1δ | PDGF-BB | TIMP-2 | *GDC* | MIP-1α | MIP-1β | MIP-1δ | PDGF-BB | TIMP-2 |
| **G** | *PPC* | IL-4 | IL-6 | IL-6sR | IL-13 | IL-15 | *PPC* | IL-4 | IL-6 | IL-6sR | IL-13 | IL-15 |
| **H** | *NTC* | TGF-β1 | TNF-α | TNF-β | s TNF RI | s TNF RII | *NTC* | TGF-β1 | TNF-α | TNF-β | s TNF RI | s TNF RII |

**Supplementary file 2 -Table X.B. Layout of GeneQuerry™ qPCR Array signalling kinases plate**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** |
| **A** | *β-actin* | p38α | Akt2 | HSP27 | *β-actin* | p38α | Akt2 | HSP27 | *β-actin* | p38α | Akt2 | HSP27 |
| **B** | *GAPDH* | p38δ | Akt3 | MKK3 | *GAPDH* | p38δ | Akt3 | MKK3 | *GAPDH* | p38δ | Akt3 | MKK3 |
| **C** | *LHDA* | JNK1 | p70S6k | MKK6 | *LHDA* | JNK1 | p70S6k | MKK6 | *LHDA* | JNK1 | p70S6k | MKK6 |
| **D** | *NONO* | JNK2 | TOR | MSK2 | *NONO* | JNK2 | TOR | MSK2 | *NONO* | JNK2 | TOR | MSK2 |
| **E** | *PPIH* | ERK1 | CREB | p53 | *PPIH* | ERK1 | CREB | p53 | *PPIH* | ERK1 | CREB | p53 |
| **F** | *GDC* | ERK2 | GSK-3α/β | RSK1 | *GDC* | ERK2 | GSK-3α/β | RSK1 | *GDC* | ERK2 | GSK-3α/β | RSK1 |
| **G** | *PPC* | Akt1 | GSK-3β | RSK2 | *PPC* | Akt1 | GSK-3β | RSK2 | *PPC* | Akt1 | GSK-3β | RSK2 |
| **H** | *NTC* | *NTC* | *NTC* | *NTC* | *NTC* | *NTC* | *NTC* | *NTC* | *NTC* | *NTC* | *NTC* | *NTC* |

**Supplementary file 2 – Table XX. Oligonucleotide primers used for qPCR amplification**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **No** | **Accesion no** | **Gene** | **Species** | **Primer orientation** | **Primer sequence** | **Primer size (bp)** | **Tm** | **Amplicon size (bp)** | **Reference** |
| 1 | NM\_001165412.1 | NF-*k*B1 | human | Fw | ACTGTGAGGATGGGATCTGC | 20 | 59 | 165 | (1) |
| Rv | GCACCAAGAGTCCAGGATTA | 20 | 57 |
| 2 | NM\_001243984.1 | RELA | human | Fw | GGGCCTTGCTTGGCAAC | 17 | 60 | 101 | (2) |
| Rv | CACAGGTATGCCCTGGTTCAG | 21 | 61 |
| 3 | NM\_001293164.1 | Nrf2 | human | Fw | CTACTCGTGTGGGACAGCAA | 20 | 60 | 143 | (3) |
| Rv | AGCAGACTCCAGGTCTTCCA | 20 | 60 |
| 4 | NM\_001621.4 | AHR | human | Fw | CTTAGGCTCAGCGTCAGTTAC | 21 | 60 | 79 | (4) |
| Rv | CGTTTCTTTCAGTAGGGGAGGAT | 23 | 61 |
| 5 | NM\_000104.3 | CYP1B1 | human | Fw | AAGTTCTTGAGGCACTGCGAA | 21 | 62 | 144 | (4) |
| Rv | GGCCGGTACGTTCTCCAAAT | 20 | 62 |
| 6 | NM\_001319217.1 | CYP1A1 | human | Fw | ACATGCTGACCCTGGGAAAG | 20 | 60 | 94 | (5) |
| Rv | GGTGTGGAGCCAATTCGGAT | 20 | 60 |
| 7 | NM\_001127891.1 | MMP-2 | human | Fw | GGCAGACATCATGATCAACT | 20 | 55 | 116 | (6) |
| Rv | TGCTGTCATAGGATGTG | 17 | 50 |
| 8 | NM\_004994.2 | MMP-9 | human | Fw | TTGACAGCGACAAGAAGTGG | 20 | 58 | 134 | (6) |
| Rv | GTACATAGGGTACATGAGCG | 20 | 55 |
| 9 | NM\_003254.2  | TIMP-1 | human | Fw | CACCCACAGACGGCCTTCT | 19 | 61 | 67 | (7) |
| Rv | CTTCTGGTGTCCGCACGAA | 19 | 60 |
| 10 | NM\_000584.3 | IL-18 | human | Fw | ACACTGCGCCAACACAGAAATTA | 23 | 61 | 185 | (8) |
| Rv | TTTGCTTGAAGTTTCACTGGCATC | 24 | 60 |
| 11 | NM\_004048.2 | β2 microglobulin | human | Fw | GTGCTCGCGCTACTCTCTC | 19 | 60 | 150 | (9) |
| Rv | GTCAACTTCAATGTCGGAT | 19 | 53 |
| 12 | NM\_005218.3 | defensin, β1  | human | Fw | CTCTGTCAGCTCAGCCTC | 18 | 56 | 179 | (10) |
| Rv | CTTGCAGCACTTGGCCTTCCC | 21 | 64 |
| 13 | NM\_001101.3 | β - actin | human | Fw | CCTGGCACCCAGCACAAT | 18 | 60 | 70 | (11) |
| Rv | GCCGATCCACACGGAGTACT | 20 | 62 |
| 14 | NM\_002046.3 | GAPDH | human | Fw | TGTGGTCATGAGTCCTTCCA | 20 | 53 | 136 | (12) |
| Rv | CATGGGTGTGAACCATGAGA | 20 | 53 |

**Supplementary file 4 -Table XXX.** **List and classification of antibodies spotted on the Inflammation Human Membrane Antibody array membrane**

|  |  |  |
| --- | --- | --- |
| **Functional classification** | **Protein Name** |  **Protein description** |
| **Chemokines** | EOTAXIN | Eosinophil chemotactic protein |
| EOTAXIN-2 | Eosinophil chemotactic protein-2 |
| I-309 | T lymphocyte-secreted protein I-309; chemokine (C-C motif) ligand 1 |
| IP-10 | Interferon gamma-induced protein 10; C-X-C motif chemokine 10(CXCL10) |
| MCP-1 | Monocyte chemoattractant protein 1; chemokine (C-C motif) ligand 2(CCL2), |
| MCP-2 | Monocyte chemoattractant protein 2; Chemokine (C-C motif) ligand 8(CCL8), |
| MIG | Monokine induced by interferon-gamma; Chemokine (C-X-C motif) ligand 9 (CXCL9) |
| MIP-1α | Macrophage inflammatory protein 1-alpha; Chemokine (C-C motif) ligand 3 (CCL3) |
| MIP-1β | Macrophage inflammatory protein-1β; Chemokine (C-C motif) ligand 4, CCL4 |
| MIP-1δ | Macrophage inflammatory protein-1 delta; Chemokine (C-C motif) ligand 15 (CCL15) |
| RANTES | Regulated on Activation, Normal T cell Expressed and Secreted; Chemokine (C-C motif) ligand 5 (CCL5) |
| **Cytokines** | IFN-γ | Interferon gamma |
| IL-1α | Interleukin-1 alpha |
| IL-1β | Interleukin-1 beta |
| IL-2 | Interleukin-2 |
| IL-3 | Interleukin-3 |
| IL-4 | Interleukin-4 |
| IL-6 | Interleukin-6 |
| IL-7 | Interleukin-7 |
| IL-8 | Interleukin-8 |
| IL-10 | Interleukin-10 |
| IL-11 | Interleukin-11 |
| IL-12 p40 | Subunit beta of interleukin 12; interleukin-12 subunit p40 |
| IL-12 p70 | Interleukin 12 heterodimer |
| IL-13 | Interleukin-13 |
| IL-15 | Interleukin-15 |
| IL-16 | Interleukin-16 |
| IL-17 | Interleukin-17 |
| GCSF | Granulocyte-colony stimulating factor  |
| GM-CSF | Granulocyte-macrophage colony-stimulating factor |
| M-CSF | Macrophage colony-stimulating factor |
| TNF-α | Tumor necrosis factor alpha |
| TNF-β | Tumor necrosis factor-beta; Lymphotoxin-alpha(LT-α) |
| **Adhesion molecules** | ICAM 1 | Intercellular Adhesion Molecule 1; CD54 (Cluster of differentiation 54) |
| **Receptors for soluble form of cytokines** | IL-6sR | Soluble receptor for interleukin-6 |
| s TNF RI | Soluble receptor I for tumor necrosis factor |
| s TNF RII | Soluble receptor II for tumor necrosis factor |
| **Growth factors** | TGF-β1 | Transforming growth factor beta 1 |
| PDGF-BB | Platelet-derived growth factor subunit B |
| **Matrix metalloproteinases inhibitors** | TIMP-2 | Tissue inhibitor of metalloproteinases 2 |

**Supplementary file 5 -Table XXXX.** **List and characteristics of analytes spotted on the Human Phospho-MAPK array membrane.**

|  |  |  |
| --- | --- | --- |
| **Target/Control** | **Alternate Nomenclature** | **Phosphorylation Site Detected** |
| **Akt1** | PKBα, RACα | S473 |
| **Akt2** | PKBβ, RACβ | S474 |
| **Akt3** | PKBγ, RACγ | S472 |
| **Akt pan** | \_\_\_ | S473, S474, S472 |
| **CREB** | \_\_\_ | S133 |
| **ERK1** | MAPK3, p44 MAPK | T202/Y204 |
| **ERK2** | MAPK1, p42 MAPK | T185/Y187 |
| **GSK-3α/β** | GSK3A/GSK3B | S21/S9 |
| **GSK-3β** | GSK3B | S9 |
| **HSP27** | HSPB1, SRP27 | S78/S82 |
| **JNK1** | MAPK8, SAPK1γ | T183/Y185 |
| **JNK2** | MAPK9, SAPK1α | T183/Y185 |
| **JNK3** | MAPK10, SAPK1β | T221/Y223 |
| **JNK pan** | \_\_\_ | T183/Y185, T221/Y223 |
| **MKK3** | MEK3, MAP2K3 | S218/T222 |
| **MKK6** | MEK6, MAP2K6 | S207/T211 |
| **MSK2** | RSKβ, RPS6KA4 | S360 |
| **p38α** | MAPK14, SAPK2A, CSBP1 | T180/Y182 |
| **p38β** | MAPK11, SAPK2B, p38-2 | T180/Y182 |
| **p38δ** | MAPK13, SAPK4 | T180/Y182 |
| **p38γ** | MAPK12, SAPK3, ERK6 | T183/Y185 |
| **p53** | \_\_\_ | S46 |
| **p70 S6 Kinase** | S6K1p70α, RPS6KB1 | T421/S424 |
| **RSK1** | MAPKAPK1α, RPS6KA1 | S380 |
| **RSK2** | ISPK-1, RPS6KA3 | S386 |
| **TOR** | \_\_\_ | S2448 |

**Supplementary file 6 - Table XXXXX. Amounts of phenolic compounds from GP extract expressed in mg/100g (catechin equivalent for catechin and derivates; cyanidin equivalent for anthocyanins)**

|  |  |  |
| --- | --- | --- |
| **Peak no.** | **Analyte (polyphenol classes)** | **Concentration (mg/100g)** |
| **1** | *Gallic acid-glucoside* | 2,223 |
| **2** | *Gallic acid* | 2,709 |
| **3** | *Procyanidin trimer* | 10.62 |
| **4** | *Procyanidin trimer* | 10.16 |
| **5** | *Catechin* | 11.63 |
| **6** | *Procyanidin dimer* | 0.0 |
| **7** | *Epicatechin* | 51.96 |
| **8** | *Gallocatechin* | 6.90 |
| **9** | *Epigallocatechin* | 9.20 |
| **10** | *Petunidin 3-O-glucoside* | 0.0 |
| **11** | *Procyanidin dimer* | 22.79 |
| **12** | *Malvidin 3-O-glucoside* | 6.75 |
| **13** | *Malvidin 3-O-(6’’- coumaroyl –glucoside)* | 7.44 |
| **14** | *Isorhamnetin 3-O-glucoside* | 0.0 |
| **15** | *Delfinidin* | 16,73 |
| **16** | *Quercetin 3-β-D-glucozida* | 1,10 |
| **17** | *Quercetin* | 5,04 |
| **18** | *Acid elagic* | 5,13 |
| **19** | *Miricetin* | 1,10 |

**References for supplementary file 1** - Table X. Oligonucleotide primers used for qPCR amplification

1. Zenhom M HA, de Vrese M, Heller KJ, Roeder T, Schrezenmeir J. (2011) Prebiotic oligosaccharides reduce proinflammatory cytokines in intestinal Caco-2 cells via activation of PPARγ and peptidoglycan recognition protein 3. *The Journal of Nutrition* **141**, 7.

2. Svehlíková V WS, Jakubíková J, Williamson G, Mithen R, Bao Y. (2004) Interactions between sulforaphane and apigenin in the induction of UGT1A1 and GSTA1 in CaCo-2 cells. *Carcinogenesis* **25**, 9.

3. Kathiria AS BM, Hansen JM, Theiss AL. (2013) Nrf2 is not required for epithelial prohibitin-dependent attenuation of experimental colitis. *American journal of physiology Gastrointestinal and liver physiology* **304**, 12.

4. Spandidos A WX, Wang H, Seed B (2010) PrimerBank: a resource of human and mouse PCR primer pairs for gene expression detection and quantification. *Nucleic Acids Research* **28**, 8.

5. Tsuji N FK, Nagata Y, Okada H, Haga A, Hatakeyama S, Yoshida S, Okamoto T, Hosaka M, Sekine K, Ohtaka K, Yamamoto S, Otaka M, Grave E, Itoh H (2014) The activation mechanism of the aryl hydrocarbon receptor (AhR) by molecular chaperone HSP90. *FEBS Open Bio* **4**, 8.

6. Rath T RM, Blöcher S, Rhode A, Basler T, Akineden Ö, Abdulmawjood A, Halwe JM, Goethe R, Bülte M, Roeb E. (2011) Presence of intestinal Mycobacterium avium subspecies paratuberculosis (MAP) DNA is not associated with altered MMP expression in ulcerative colitis. *BMC Gastroenterology* **11**, 19.

7. Strup-Perrot C MD, Linard C, Violot D, Milliat F, François A, Bourhis J, Vozenin-Brotons MC. (2004) Global gene expression profiles reveal an increase in mRNA levels of collagens, MMPs, and TIMPs in late radiation enteritis. *Am J Physiol Gastrointest Liver Physiol* **287**, 11.

8. Fujita Y NM, Naito M, Yamachika E, Inoue T, Nakayama K, Iida S, Ohara N. (2014) Hemoglobin receptor protein from Porphyromonas gingivalis induces interleukin-8 production in human gingival epithelial cells through stimulation of the mitogen-activated protein kinase and NF-κB signal transduction pathways. *Infection and Immunity* **82**, 10.

9. Parmar A GD, Venäläinen J, Gentile M, Dukes E, Saavalainen P. (2013) Gene Expression Profiling of Gliadin Effects on Intestinal Epithelial Cells Suggests Novel Non-Enzymatic Functions of Pepsin and Trypsin. *PLoS One* **8**, 7.

10. Yoon YM LJ, Yoo D, Sim YS, Kim YJ, Oh YK, Kang JS, Kim S, Kim JS, Kim JM. (2010) Bacteroides fragilis enterotoxin induces human beta-defensin-2 expression in intestinal epithelial cells via a mitogen-activated protein kinase/I kappaB kinase/NF-kappaB-dependent pathway. *Infection and Immunity* **78**, 10.

11. Boesten DM vU-SS, den Hartog GJ1 Bast A (2015) Protective Pleiotropic Effect of Flavonoids on NAD⁺ Levels in Endothelial Cells Exposed to High Glucose. *Oxidative medicine and cellular longevity* **2015**, 7.

12. Monira P KY, Fukutomi R, Yasui K, Isemura M, Yokogoshi H. (2009) Effects of Japanese mistletoe lectin on cytokine gene expression in human colonic carcinoma cells and in the mouse intestine. *Biomedical research (Tokyo, Japan)* **30**, 8.