**Supplementary table 3**: Host proteins summarized from eligible studies in the systematic review.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Hospedeiro** | **Proteína** | **Função** | **Acúmulo** | **Órgãos** | **Autores** |
| *Theobroma cacao* L. | TcCys1 (cystatin) | Defense, development of programmed cell death symptoms, inhibits mycelial growth and acts on hyphal shortening | ↑ | Leaves, meristems, roots, seeds and stems | Pirovani et al. 2010\* |
| TcCys2 (cystatin) | ↑ |
| TcCys3 (cystatin) | ↑ |
| TcCys4 (cystatin) | ↑ |
| *Nicotiana benthamiana* | 60 kDa chaperonin subunit alpha (CPN-60 alpha) | NA | ↑ | Suspended cell | Villela-Dias et al. 2013\* |
| Pyruvate decarboxylase (PDC) | oxidation-reduction | ↑ |
| UDP glucose 6 dehydrogenase (UDPG) | oxidation-reduction | ↑ |
| Enolase (ENO) | NA | ↑ |
| Alpha tubulin | NA | ↑ |
| Adenosylhomocysteinase | NA | ↑ |
| Malate dehydrogenase (MDH) | Citric acid cycle | ↑ |
| Heat shock protein 80 | Stress response | ↑ |
| Annexin | Ligação ao Ca 2+ | ↑ |
| Aconitate hydratase (ACO) | Citric acid cycle | ↑ |
| Elongation factor 2 (EF-2) | NA | ↑ |
| NADH ubiquinone oxidoreductase isoform 1 and 2 | oxidation-reduction | ↑ |
| Superoxide dismutase Mn mitochondrial (MnSOD) | oxidation-reduction | ↑ |
| 5-methyltetrahydropteroyltriglutamate-homocysteine S-methyltransferase (MetE) | Methionine biosynthesis | ↑ |
| Heat shock cognate 70 kDa | Stress response | ↑ |
| Alcohol dehydrogenase (ADH) | Oxidation-reduction | ↑ |
| Stromal 70 kDa heat shock | Stress response | ↓ |
| Nucleosome assembly protein 1 like protein 2 | NA | ↓ |
| Glyceraldehyde 3 phosphate dehydrogenase (GAPDH) | NA | ↓ |
| Calreticulin | Protein folding | ↓ |
| 2,3-bisphosphoglycerate-independent phosphoglycerate mutase (PGAM-i) | Glucose biosynthesis | ↓ |
| 14-3-3-like protein GF14 epsilon | NA | ↓ |
| Glutathione S transferase (GST) | NA | ↓ |
| Copper chaperone | NA | ↓ |
| Glycine-rich RNA binding protein 3 | NA | ↓ |
| Heat shock cognate 70 kDa protein 2 | Stress response | ↓ |
| Heat shock protein 90 (HSP90) | Stress response | ↓ |
| Heat shock protein 81 (HSP81) | Stress response | ↓ |
| Fructose-bisphosphate aldolase cytoplasmic (aldolase) | Glucose biosynthesis | ↓ |
| Fructose bisphosphate aldolase like protein | Glucose biosynthesis | ↓ |
| l-ascorbate peroxidase 2 cytosolic (APX2) | Stress response | ↓ |
| *Theobroma cacao* (Genótipo resistente) | Desiccation-related protein | Desiccation-related protein | NA | Filoplano | Almeida et al. 2017\* |
| Peptide transporter PTR3 | Peptide transporter | NA |
| RNAse\_H | Degrades RNA hybrid RNA:DNA | NA |
| Protein p14 | Pre-mRNA splicing | NA |
| Retrotransposon protein Ty1 | Binds to DNA; related to disease resistance in plants | NA |
| NAC domain-containing protein | Transcription factor | NA |
| CRM family member 2 | RNA splicing and ribosome maturation | NA |
| 50S Ribosomal protein L4 | Repressor of transcription or translation | NA |
| Pentatricopeptide repeat containing protein | Unknown function; may be involved in RNA processing and stabilization | NA |
| DNA-directed RNA polymerase 3 | Synthesizes small rRNA and tRNA complex enzymes that are responsible for transcription of DNA into RNA | NA |
| 50S ribosomal protein L7/L12 | Ribonucleoprotein involved in protein translation | NA |
| RNAse\_H (ribonuclease) | Cleaves RNA hybrid RNA:DNA | NA |
| β-Caryophyllene synthase | Isoprenoid biosynthesis (plant defense) | NA |
| Laccase 11 | Oxidoreductase, process synthesis of lignin | NA |
| Transketolase chloroplastic | Participates in the Calvin cycle in photosynthesis (energy) | NA |
| Leucine-rich repeat receptor kinase | Signal transduction; via signaling (receptor) in plant defense against pathogens | NA |
| E3 ubiquitin ligase PUB14 | Proteins related to plant–pathogen interaction | NA |
| Retrotransposon/probable polyprotein | Binds to nucleic acids; disease resistance in plants (plant protection) | NA |
| Similar to pherophorin-like protein | Glycoprotein of the extracellular matrix (cell structure) | NA |
| α/β-Hydrolase domain-containing protein | Catalytic functions in lipid metabolism (metabolism) | NA |
| Transcription elongation factors IIS | Efficient formation or stability of the complex with RNA polymerase II (transcription) | NA |
| Serine carboxypeptidase S28 family protein | Protein degradation—Protease (plant defense) | NA |
| Terpene cyclase, C1 domain-containing protein | Isoprenoid biosynthesis (plant defense) | NA |
| Endonuclease/exonuclease/phosphatase | DNA repair | NA |
| RNA methyltransferase | Processing RNAs (transcription) | NA |
| Phosphatidylcholine-sterol O-acyltransferase | Metabolism of lipids, steroids; important in the process of leaf senescence | NA |
| B3 domain-containing protein REM16 | Involved in regulation of transcription | NA |
| Armadillo repeat domain of β-catenin protein | Signal transduction in hormonal responses | NA |
| DNA repair protein Rad4 family | Participates in repairing damaged DNA nucleotide excision | NA |
| Glicoprotease 1 | Protease | NA |
| Hypothetical protein | Unknown | NA |
| O-Glycosyl hydrolases | Carbohydrate metabolism (metabolism) | NA |
| Protein 10 type rhomboid | Serine endoproteinase activity type—Serine protease | NA |
| Elongation factor G | Translocation of the ribosome during translation | NA |
| Chaperonin 60 kDa | Protein folding (plant defense) | NA |
| ATP synthase subunit α | Regulating the synthesis of ATP (energy) | NA |
| Elongation factor Tu | tRNA binds to the ribosome (translation) | NA |
| Elongation factor Ts | Phosphorylation of GDP to GTP (translation) | NA |
| Polyribonucleotide nucleotidyltransferase | Processing mRNA | NA |
| Outer membrane protein Omp38 | Diffusion of small metabolites (cell structure) | NA |
| Phosphate-binding protein PstS | Transport of phosphate and response to stress (plant defense) | NA |
| ATP-dependent Clp protease proteolytic subunit | Degradation of proteins (plant defense) | NA |
| ATP synthase subunit β | Energy | NA |
| *Theobroma cacao* L. | TcSBP | Proteína de resistência (Proteínas termoestável; se liga ao selenito e potencialmente pode ser capaz de se ligar a metais pesados). | NA | *In sílico* | Alves et al. 2019\* |
| *Theobroma cacao* L. | Tc -cAPX | Oxidative stress | NA | *In sílico* | Camillo et al. 2013\* |
| *Theobroma cacao* (Genótipo resistente) | Ascorbate peroxidase | Oxidative stress | ↑ | Ápices caulinares | Dos Santos et al. 2020\* |
| Peroxidase superfamily protein | Oxidative stress | ↑ |
| Class III peroxidase | Oxidative stress | ↓ |
| 2-cysteine peroxiredoxin B | Oxidative stress | ↓ |
| Peroxidase 4 | Oxidative stress | ↓ |
| Chaperonin CPN60 2 mitochondrial | Oxidative stress | ↓ |
| hypothetical protein CICLE\_v10000948mg | Oxidative stress | ↑ |
| Glyceraldehyde-3-phosphate dehydrogenase C2 isoform 2 | Oxidative stress | ↑ |
| Glyceraldehyde-3-phosphate dehydrogenase C2 isoform 1 | Oxidative stress | ↑ |
| Cationic peroxidase 2 precursor | Oxidative stress | ↑ |
| Peroxidase superfamily protein isoform 1 | Oxidative stress | ↓ |
| Superoxide dismutase | Oxidative stress | ↑ |
| Copper/zinc superoxide dismutase 2 isoform 1 | Oxidative stress | ↑ |
| Peroxidase superfamily protein isoform 1 | Oxidative stress | ↓ |
| Chlorophyll a-b binding protein 3, chloroplastic | Photosynthesis and carbohydrate metabolism | ↓ |
| Phosphomannomutase | Photosynthesis and carbohydrate metabolism | ↓ |
| 6-phosphogluconate dehydrogenase family protein | Photosynthesis and carbohydrate metabolism | ↑ |
| Glyceraldehyde-3-phosphate dehydrogenase C2 isoform 1 | Photosynthesis and carbohydrate metabolism | ↑ |
| Glyceraldehyde-3-phosphate dehydrogenase C2 isoform 2 | Photosynthesis and carbohydrate metabolism | ↑ |
| Insulinase (Peptidase family M16) protein isoform 1 | Photosynthesis and carbohydrate metabolism | ↑ |
| Photosystem I subunit D-2 | Photosynthesis and carbohydrate metabolism | ↓ |
| Glycosyl hydrolase superfamily protein | Photosynthesis and carbohydrate metabolism | ↑ |
| Ribulose bisphosphate carboxylase/oxygenase activase 1 isoform 1 | Photosynthesis and carbohydrate metabolism | ↑ |
| Aldolase superfamily protein isoform 1 | Photosynthesis and carbohydrate metabolism | ↑ |
| Amidase family protein isoform 1 | Photosynthesis and carbohydrate metabolism | ↓ |
| Light-harvesting chlorophyll B-binding protein 3 | Photosynthesis and carbohydrate metabolism | ↓ |
| Lactate/malate dehydrogenase family protein | Photosynthesis and carbohydrate metabolism | ↓ |
| Phosphoglycerate kinase 1 | Photosynthesis and carbohydrate metabolism | ↑ |
| Sedoheptulose-bisphosphatase | Photosynthesis and carbohydrate metabolism | ↑ |
| Glycosyl hydrolase family 38 protein isoform 1 | Photosynthesis and carbohydrate metabolism | ↑ |
| Chlorophyll a-b binding protein, chloroplastic | Photosynthesis and carbohydrate metabolism | ↓ |
| hypothetical protein CICLE\_v10012049mg | Photosynthesis and carbohydrate metabolism | ↓ |
| Putative uncharacterized protein | Photosynthesis and carbohydrate metabolism | ↑ |
| Putative Beta xylosidase alpha L arabinofuranosidase 2 | Photosynthesis and carbohydrate metabolism | ↑ |
| putative miraculin-like protein 2 | Stress and defense | ↑ |
| Voltage dependent anion channel 2 | Stress and defense | ↑ |
| Heat shock protein 89.1 isoform 1 | Stress and defense | ↑ |
| Adenine nucleotide alpha hydrolases-like superfamily protein | Stress and defense | ↑ |
| Chitinase A | Stress and defense | ↑ |
| 21 kDa seed protein, putative | Stress and defense | ↑ |
| Mitochondrial HSO70 2 isoform 2 | Stress and defense | ↑ |
| Prohibitin 2 | Stress and defense | ↑ |
| MLP-like protein 28 | Stress and defense | ↓ |
| Chloroplast heat shock protein 70 isoform 1 | Stress and defense | ↑ |
| Carrot EP3–3 chitinase, putative isoform 1 | Stress and defense | ↑ |
| Pathogenesis-related protein 10.5 | Stress and defense | ↑ |
| Adenine nucleotide alpha hydrolases-like superfamily protein | Stress and defense | ↑ |
| 2-cysteine peroxiredoxin B | Stress and defense | ↓ |
| Pathogenesis-related protein P2 isoform 1 | Stress and defense | ↓ |
| Pathogenesis-related protein P2 isoform 2, partial | Stress and defense | ↑ |
| Pathogenesis-related protein PR-4B | Stress and defense | ↑ |
| Abscisic stress ripening protein | Stress and defense | ↓ |
| 21 kDa seed protein | Stress and defense | ↓ |
| Osmotin 34 | Stress and defense | ↑ |
| 17.6 kDa class II heat shock protein | Stress and defense | ↑ |
| TCP-1/cpn60 chaperonin family protein | Stress and defense | ↓ |
| class I chitinase | Stress and defense | ↑ |
| Thaumatin-like protein | Stress and defense | ↑ |
| Chaperonin CPN60 2 mitochondrial | Stress and defense | ↓ |
| *Theobroma cacao* (Genótipo suceptível) | Ascorbate peroxidase | Oxidative stress | ↑ |
| Peroxidase | Oxidative stress | ↑ |
| Peroxidase 68 | Oxidative stress | ↑ |
| Class III peroxidase | Oxidative stress | ↓ |
| Peroxidase 4 | Oxidative stress | ↓ |
| Malate dehydrogenase cytoplasmic | Photosynthesis and carbohydrate metabolism | ↑ |
| Sucrose synthase | Photosynthesis and carbohydrate metabolism | ↑ |
| Pyrophosphate--fructose 6 phosphate 1 phosphotransferase subunit alpha | Photosynthesis and carbohydrate metabolism | ↑ |
| Rhamnose biosynthesis 1 isoform 1 | Photosynthesis and carbohydrate metabolism | ↑ |
| hypothetical protein CICLE\_v10032502mg | Photosynthesis and carbohydrate metabolism | ↑ |
| Malate dehydrogenase | Photosynthesis and carbohydrate metabolism | ↓ |
| PfkB-like carbohydrate kinase family protein | Photosynthesis and carbohydrate metabolism | ↓ |
| Beta-glucosidase 44 | Photosynthesis and carbohydrate metabolism | ↓ |
| Enolase | Photosynthesis and carbohydrate metabolism | ↓ |
| NADP-dependent malic enzyme | Photosynthesis and carbohydrate metabolism | ↓ |
| PfkB-like carbohydrate kinase family protein | Photosynthesis and carbohydrate metabolism | ↓ |
| Aldolase superfamily protein isoform 1 | Photosynthesis and carbohydrate metabolism | ↓ |
| Phosphoglycerate kinase cytosolic | Photosynthesis and carbohydrate metabolism | ↓ |
| Aldolase-type TIM barrel family protein isoform 1 | Photosynthesis and carbohydrate metabolism | ↑ |
| Glucose-6-phosphate 1 dehydrogenase cytoplasmic isoform | Photosynthesis and carbohydrate metabolism | ↑ |
| Photosystem II subunit O-2 | Photosynthesis and carbohydrate metabolism | ↓ |
| Methionine synthase | Photosynthesis and carbohydrate metabolism | ↑ |
| 5-methyltetrahydropteroyltriglutamate--homocysteine methyltransferase | Photosynthesis and carbohydrate metabolism | ↑ |
| Prohibitin 2 | Photosynthesis and carbohydrate metabolism | ↑ |
| Chloroplast heat shock protein 70 isoform 1 | Photosynthesis and carbohydrate metabolism | ↓ |
| hypothetical protein CICLE\_v10027981mg | Photosynthesis and carbohydrate metabolism | ↑ |
| heat shock protein 70B | Photosynthesis and carbohydrate metabolism | ↑ |
| Prohibitin 2 | Photosynthesis and carbohydrate metabolism | ↑ |
| Osmotin 34 | Photosynthesis and carbohydrate metabolism | ↑ |
| Basic chitinase | Photosynthesis and carbohydrate metabolism | ↑ |
| Glucan endo 1 3 beta glucosidase basic vacuolar isoform | Photosynthesis and carbohydrate metabolism | ↑ |
| Ankyrin repeat domain-containing protein 2 isoform 1 | Photosynthesis and carbohydrate metabolism | ↑ |
| Uncharacterized protein TCM\_004731 | Photosynthesis and carbohydrate metabolism | ↑ |
| 21 kDa seed protein | Photosynthesis and carbohydrate metabolism | ↓ |
| Voltage dependent anion channel 2 | Photosynthesis and carbohydrate metabolism | ↑ |
| Prohibitin 3 isoform 1 | Photosynthesis and carbohydrate metabolism | ↓ |
| MLP-like protein 28 | Photosynthesis and carbohydrate metabolism | ↓ |
| Heat shock 70 kDa protein mitochondrial | Photosynthesis and carbohydrate metabolism | ↓ |
| Heat shock cognate protein 70–1 | Photosynthesis and carbohydrate metabolism | ↓ |
| Heatshock cognate protein 80 | Photosynthesis and carbohydrate metabolism | ↓ |
| Acidic endochitinase | Photosynthesis and carbohydrate metabolism | ↓ |
| Putative miraculin-like protein 2 | Photosynthesis and carbohydrate metabolism | ↓ |
| *Theobroma cacao* L. | TcPHYLL (phylloplanin) | Pathogenicity (stress response) | NA | *In sílico* | Freire et al. 2017\* |
| *Theobroma cacao* L. | TcPR-1f (kinase domain) | Defense response | ↑ | Suspended cell | Tosarini et al. 2018\* |
|  | TcPR-1g (kinase domain) | Defense response | ↑ |
| *Theobroma cacao* L. | β-1,3-1,4-glucanase | Antifungal activity (Membrane hydrolysis) | ↑ | Suspended cell | Britto et al.2013\* |
| *Theobroma cacao* L. | TcLEG3 (Legumain) | Related to the seed | NA | *In sílico* | Santana et al. 2016\* |
| TcLEG6 (Legumain) | Related with embryogenesis. | NA |
| TcLEG9 (Legumain) | Defense against pathogen | NA |
| *Theobroma cacao* (Genótipo suceptível) | TcCYSPR04 (cysteine protease) | Defense response | ↑ | Fluido apoplástico | Cardoso et al. 2015\* |
| *Theobroma cacao* (Genótipo resistente) | TcCYSPR04 (cysteine protease) | Defense response | ↑ |
| *Theobroma* *cacao* L. | Proteína de ligação BiP | Molecular Chaperone | ↑ | Meristema | Alvim et al. 2009\* |
| *Theobroma cacao* L. | TcPR-4b | Antifungal activity; RNase and DNase activity | NA | *In sílico* | Menezes et al. 2014\* |
| *Theobroma cacao* L. | TcWRKY | Transcription Factor | NA | *In sílico* | De Almeida et al. 2017\* |
| *Theobroma cacao* (Genótipo suceptível) | TcTI (Trypsin Inhibitor) | Antifungal activity (inhibitory action) | ↑ | Meristema | Amaral et al. 2022\* |
| *Theobroma cacao* (Genótipo resistente) | TcTI (Trypsin Inhibitor) | Antifungal activity (inhibitory action) | ↓ |
| *Theobroma cacao* L. | TcOsm1 | Antifungal activity (antimicrobial action, inhibition of mycelial growth) | ↑ | Suspended cell | Falcao et al. 2016\* |
| Osm-pepA | Antifungal activity (antimicrobial action, inhibition of mycelial growth) | ↑ |
| Osm-pepB | Antifungal activity (antimicrobial action, inhibition of mycelial growth) | ↑ |
| *Theobroma cacao* L. | TcPR-10 | Antifungal activity (Action as ribonuclease and allergenic potential) | ↑ | Suspended cell | Menezes et al. 2012\* |

NA: not assigned

\*References available at:<https://github.com/ArianaSantos/Santos-et-al.2022_systematic-review.git>