CLAIMS

1. A genetically engineered microorganism that produces muconic acid from a nonaromatic carbon source comprising at least one exogenous gene encoding for 3,4-dihydroxybenzoic acid decarboxylase and at least one gene that codes for a protein that increases the activity of said 3,4-dihydroxybenzoic acid decarboxylase selected from a *kpdB* gene encoding for a KpdB protein or a *ubiX* gene encoding for a UbiX protein.

2. The genetically engineered microorganism of claim 1, wherein said genetically engineered microorganism is a bacterium.

3. The genetically engineered microorganism of claim 1, wherein said genetically engineered microorganism is *Escherichia coli*.

4. The genetically engineered microorganism of claim 1, further comprising one or more exogenous genes selected from the group consisting of *aroZ*, *qa-4*, *asbF*, *quiC* and *catAX*.

5. The genetically engineered microorganism of claim 1, further comprising one or more exogenous genes selected from the group consisting of *aroB*, *aroD*, *aroF*, *aroG*, *aroH*, *tktA*, *talB*, *rpe*, and *rpi*, wherein said one or more exogenous genes encode one or more proteins that function in a shikimic acid pathway.

6. The genetically engineered microorganism of claim 1, further comprising at least one exogenous gene encoding a pyruvate carboxylase and a mutation of the phosphoenol pyruvate carboxylase gene to a decrease or elimination of phosphoenol pyruvate carboxylase activity.

7. A genetically engineered *Escherichia coli* strain that produces muconic acid from a non-aromatic carbon source comprising at least one exogenous gene encoding for

~~3,4—dihydroxybenzoic acid decarboxylase, at least one gene that codes for a protein that increases the activity of said 3,4–dihydroxybenzoic acid decarboxylase selected from a *kpdB* gene encoding for a KpdB protein or a *ubiX* gene encoding for a UbiX protein, a mutation of a *pykF* gene to a decrease or elimination of the pyruvate kinase activity and at least one modified *aroG* exogenous gene that codes for an AroG protein which is resistant to feedback inhibition, wherein at least one modified *aroG* exogenous gene is inserted at physical location 2160 in the *Escherichia coli*, wherein said genetically engineered *Escherichia coli* strain produces at least 60 g/L of muconic acid in 72 hours.~~

~~8. The genetically engineered *Escherichia coli* strain of claim 7, further comprising one or more exogenous genes selected from the group consisting of *aroZ, qa–4, asbF, quiC* and *catAX*.~~

~~9. The genetically engineered *Escherichia coli* strain of claim 7, further comprising at least one exogenous gene encoding a pyruvate carboxylase and a mutation of the phosphoenol pyruvate carboxylase gene.~~

1. A genetically engineered *Escherichia coli* microorganism that produces muconic acid from a non-aromatic carbon source comprising

at least one exogenous gene encoding for 3,4-dihydroxybenzoic acid decarboxylase,

at least one exogenous gene encoding for UbiX protein that increases the activity of said 3,4-dihydroxybenzoic acid decarboxylase,

at least one exogenous gene encoding for catechol 1,2-dioxygenase, and

at least one exogenous gene encoding for 3-dehydroshikimate dehydratase selected from the group consisting of selected from *aroZ, qa4, asbF*, and *quiC*.

2. The genetically engineered microorganism of claim 1, further comprising at least one exogenous gene encoding for 3-dehydroquinate synthase.

3. The genetically engineered microorganism of claim 1, further comprising at least one exogenous gene encoding for deoxyarabino-heptulosonate.

4. The genetically engineered microorganism of claim 1, further comprising at least one exogenous gene encoding for transketolase.

5. The genetically engineered microorganism of claim 1, further comprising at least one exogenous gene encoding for 3-dehydroquinate dehydratase

6. The genetically engineered microorganism of claim 1, further comprising at least one exogenous gene encoding for pyruvate carboxylase and a mutation of a phosphoenol pyruvate carboxylase gene to a decrease or elimination of phosphoenol pyruvate carboxylase activity.