CLAIMS

1. A process for the production of *(R)*-3-hydroxybutyl *(R)*-3-hydroxybutyrate comprising:
   (i) contacting poly-*(R)*-3-hydroxybutyrate with an alcohol to transesterify the poly-*(R)*-3-hydroxybutyrate under transesterification conditions to produce an ester of *(R)*-3-hydroxybutyrate and the alcohol;
   (ii) separating the product of step i) into a first and second portion and reducing the first portion of the *(R)* 3-hydroxybutyrate ester to form (*R*)-1,3-butanediol;
   (iii) contacting under transesterification conditions the (*R*)-1,3-butanediol from step ii) with the second portion of the transesterified ester to produce *(R)*-3-hydroxybutyl-*(R)*-hydroxybutanoate.

2. A process according to claim 1 wherein the poly-*(R)*-3-hydroxybutyrate is obtained from corn starch or sugar cane.

3. A process according to claim 1 or claim 2 wherein the poly-*(R)*-3-hydroxybutyrate is transesterified in step i) using ethanol.

4. A process according to any one of the preceding claims wherein the weight ratio of alcohol to poly-*(R)*-3-hydroxybutyrate is from 1:1 to 10:1.

5. A process according to any one of the preceding claims wherein the step i) is carried out in acidic conditions.

6. A process according to any one of the preceding claims wherein the product of step i) is treated to neutralise the acid, remove the alcohol by distillation.

7. A process according to claim 6 wherein the distillation is carried out at a temperature of 110 °C to 150 °C.

8. A process according to any one of the preceding claims wherein the reduction in step ii) comprises reducing *(R)*-3-hydroxybutyrate ester using a hydride transfer reagent.

9. A process according to claim 8 wherein the reducing agent is selected from lithium aluminium hydride, sodium bis (2-methoxyethoxy) aluminium hydride, sodium borohydride, nickel borohydride.

CLAIMS

1. A process for the production of *(R)*-3-hydroxybutyl *(R)*-3-hydroxybutyrate comprising:
   (i) contacting poly-*(R)*-3-hydroxybutyrate with a C_{1-6} monohydric, dihydric or trihydric alcohol capable of transesterifying poly-*(R)*-3-hydroxybutyrate, to transesterify the poly-*(R)*-3-hydroxybutyrate under transesterification conditions to produce an ester of *(R)*-3-hydroxybutyrate and the said alcohol;
   (ii) separating the product of step i) into a first and second portion and reducing the first portion of the *(R)* 3-hydroxybutyrate ester to form (*R*)-1,3-butanediol;
   (iii) contacting under transesterification conditions the (*R*)-1,3-butanediol from step ii) with the second portion of the transesterified ester to produce *(R)*-3-hydroxybutyl-*(R)*-hydroxybutanoate.

2. A process according to claim 1 wherein the poly-*(R)*-3-hydroxybutyrate is obtained from corn starch or sugar cane.

3. A process according to claim 1 or claim 2 wherein the poly-*(R)*-3-hydroxybutyrate is transesterified in step i) using ethanol.

4. A process according to any one of the preceding claims wherein the weight ratio of alcohol to poly-*(R)*-3-hydroxybutyrate is from 1:1 to 10:1.

5. A process according to any one of the preceding claims wherein the step i) is carried out in acidic conditions.

6. A process according to any one of the preceding claims wherein the product of step i) is treated to neutralise the acid, remove the alcohol by distillation.

7. A process according to claim 6 wherein the distillation is carried out at a temperature of 110 °C to 150 °C.

8. A process according to any one of the preceding claims wherein the reduction in step ii) comprises reducing *(R)*-3-hydroxybutyrate ester using a hydride transfer reagent.

9. A process according to claim 8 wherein the reducing agent is selected from lithium aluminium hydride, sodium bis (2-methoxyethoxy) aluminium hydride, sodium borohydride, nickel borohydride.