Citation List

Patent Literature

[0004]

Patent Literature 1: Japanese Patent Application Laid-Open No. 2012-41302

Patent Literature 2: Japanese Patent Application Laid-Open No. 2012-167042

Summary

[0004a] In one aspect of the present disclosure, there is provided a cosmetic comprising an agent comprising D-pantothenyl alcohol and one or more selected from the following skin-whitening agents (A) to (G) when used in skin-whitening:

(A) one or more plant extracts having a melanogenesis inhibitory action selected from the group consisting of *Uncaria gambir* extract, *Isodon japonicus* extract, *Echinacea angustifolia* leaf extract, *Lithospermum erythrorhizon* root extract, *Carthamus tinctorius* flower extract, *Persea gratissima* fruit extract, *Abelmoschus esclentus* fruit extract, *Actinidia chinensis* fruit extract, *Alpinia speciosa* leaf extract, *Saponaria officinalis* extract, *Caprifoliaceae* extract, green tea extract, *Benincasa cerifera* seed exract, *Allium sativum* extract, *Citrus aurantifolia* fruit juice extract, natto extract, *Citrus aurantium dulsis* fruit extract, *Valeriana officinalis* extract,

Cucumis sativus extract, *Prunus armeniaca* extract, *Gardenia florida* extract, *Citrus grandis* fruit extract, *Arctium lappa* root extract, black tea extract, *Equisetum arvense* extract, *Malva sylvestris* extract, *Jujube* extract, *Solanum lycopersicum* extract, *Daucus carota sativa* extract, *Hoelen* extract, *Lilium candidum* bulb extract, *Litchi chinensis* extract, *Lactuca scariola sativa* leaf extract, *Citrus medica limonum* fruit extract, and royal jelly extract;

(B) a 4-alkyl resorcinol;

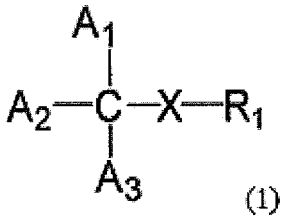
(C) a compound represented by the following general formula (1);

(D) a compound represented by the following general formula (2);

(E) a compound represented by the following general formula (3);

(F) an ursolic acid phosphate ester; and

(G) a salt of the (B), (C), (D), (E), or (F);



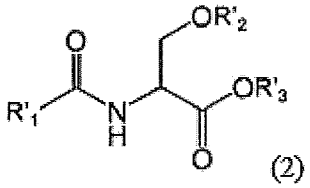
(1)

[wherein A_1, A_2, and A_3 independently represent a phenyl which optionally contains a substituent,

the substituent is selected from hydroxyl, C_1-C_4 alkyl, and C_1-C_4 alkyloxy,

X is a nitrogen atom or oxygen atom, and

$-X-R_1$ is represented by the following general formula (4), (5), or (6)];



(2)

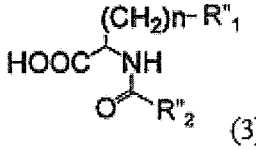
[wherein R'_1 represents an aromatic group which is unsubstituted or contains a substituent,

the substituent is a C_1-C_4 linear or branched alkyl group, C_1-C_4 linear or branched alkoxy group, halogen atom, or C_1-C_4 halogenated alkyl group,

the aromatic group is a phenyl group, naphthyl group, or biphenyl group,

R'_2 represents a hydrogen atom, C_1-C_4 linear or branched alkyl group, or C_1-C_3 linear or branched alkyl acyl group, and

R'_3 represents a hydrogen atom or C_1-C_4 linear or branched alkyl group];



(3)

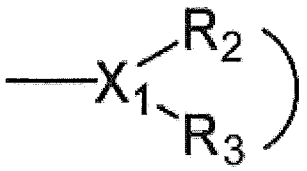
[wherein R''_1 represents -SH, $-SO_3H$, $-S-S-X_1$, $-S-X_2$, $-SO-X_3$, or $-SO_2-X_4$, in which X_1 to X_4 are independently a hydrogen atom or C_1-C_8 aliphatic hydrocarbon group,

R''_2 represents a C_5-C_{12} aromatic group which optionally is unsubstituted or contains a substituent,

the aromatic group is preferably a phenyl group,

n represents an integer of 1 or 2, and

the substituent is a C_1-C_4 alkyl group, C_1-C_4 alkoxy group, or phenyl group];



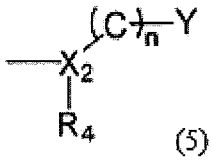
(4)

[wherein X_1 is a nitrogen atom,

R_2 and R_3 are bound to each other to form, together with X_1, a C_2-C_8 heterocyclic ring which optionally has a substituent,

the substituent is selected from a C_1-C_4 alkyl, C_1-C_4 alkyloxy, hydroxyl, amino, and oxo, and

the carbon number of the heterocyclic ring is 3 to 5];



(5)

[wherein X_2 is a nitrogen atom or oxygen atom,

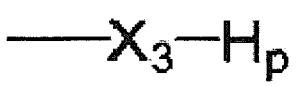
n is an integer of 1 to 5,

n is preferably an integer of 1 to 3,

Y is a hydroxyl group or amino group,

R_4 exists when X_2 is a nitrogen atom, and represents a hydrogen atom, and

R_4 does not exist when X_2 is an oxygen atom];



(6)

[wherein X_3 is an oxygen atom or nitrogen atom, and

p is the number corresponding to X_3].

[0004b] In another aspect of the present disclosure, there is provided

a skin-whitening method, comprising the steps of whitening skin by contacting an agent comprising D-pantothenyl alcohol with the skin; and whitening the skin by contacting one or more selected from the following skin-whitening agents (A) to (G) with the skin:

(A) one or more plant extracts having a melanogenesis inhibitory action selected from the group consisting of *Uncaria gambir* extract, *Isodon japonicus* extract, *Echinacea angustifolia* leaf extract, *Lithospermum erythrorhizon* root extract, *Carthamus tinctorius* flower extract, *Persea gratissima* fruit extract, *Abelmoschus esclentus* fruit extract, *Actinidia chinensis* fruit extract, *Alpinia speciosa* leaf extract, *Saponaria officinalis* extract, *Caprifoliaceae* extract, green tea extract, *Benincasa cerifera* seed exract, *Allium sativum* extract, *Citrus aurantifolia* fruit juice extract, natto extract, *Citrus aurantium dulsis* fruit extract, *Valeriana officinalis* extract, *Cucumis sativus* extract, *Prunus armeniaca* extract, *Gardenia florida* extract, *Citrus grandis* fruit extract, *Arctium lappa* root extract, black tea extract, *Equisetum arvense* extract, *Malva sylvestris* extract, *Jujube* extract, *Solanum lycopersicum* extract, *Daucus carota sativa* extract, *Hoelen* extract, *Lilium* candidum bulb extract, *Litchi chinensis* extract, *Lactuca scariola sativa* leaf extract, *Citrus medica limonum* fruit extract, and royal jelly extract;

(B) a 4-alkyl resorcinol;

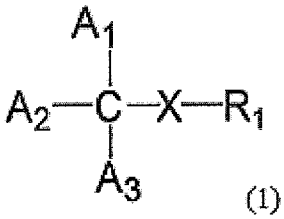
(C) a compound represented by the following general formula (1);

(D) a compound represented by the following general formula (2);

(E) a compound represented by the following general formula (3);

(F) an ursolic acid phosphate ester; and

(G) a salt of the (B), (C), (D), (E), or (F);



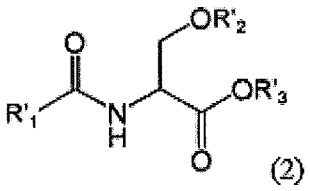
(1)

[wherein A_1, A_2, and A_3 independently represent a phenyl which optionally contains a substituent,

the substituent is selected from hydroxyl, C_1-C_4 alkyl, and C_1-C_4 alkyloxy,

X is a nitrogen atom or oxygen atom, and

$-X-R_1$ is represented by the following general formula (4), (5), or (6)];



(2)

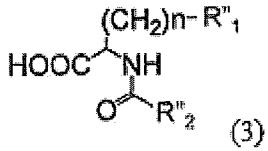
[wherein R'_1 represents an aromatic group which is unsubstituted or contains a substituent,

the substituent is a C_1-C_4 linear or branched alkyl group, C_1-C_4 linear or branched alkoxy group, halogen atom, or C_1-C_4 halogenated alkyl group,

the aromatic group is a phenyl group, naphthyl group, or biphenyl group,

R'_2 represents a hydrogen atom, C_1-C_4 linear or branched alkyl group, or C_1-C_3 linear or branched alkyl acyl group, and

R'_3 represents a hydrogen atom or C_1-C_4 linear or branched alkyl group];



(3)

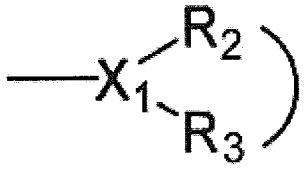
[wherein R''_1 represents -SH, $-SO_3H$, $-S-S-X_1$, $-S-X_2$, $-SO-X_3$, or $-SO_2-X_4$, in which X_1 to X_4 are independently a hydrogen atom or C_1-C_8 aliphatic hydrocarbon group,

R''_2 represents a C_5-C_{12} aromatic group which optionally is unsubstituted or contains a substituent,

the aromatic group is preferably a phenyl group,

n represents an integer of 1 or 2, and

the substituent is a C_1-C_4 alkyl group, C_1-C_4 alkoxy group, or phenyl group];



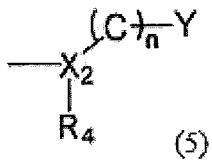
(4)

[wherein X_1 is a nitrogen atom,

R_2 and R_3 are bound to each other to form, together with X_1, a C_2-C_8 heterocyclic ring which optionally has a substituent,

the substituent is selected from a C_1-C_4 alkyl, C_1-C_4 alkyloxy, hydroxyl, amino, and oxo, and

the carbon number of the heterocyclic ring is 3 to 5];



(5)

[wherein X_2 is a nitrogen atom or oxygen atom,

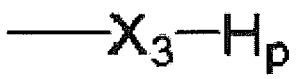
n is an integer of 1 to 5,

n is preferably an integer of 1 to 3,

Y is a hydroxyl group or amino group,

R_4 exists when X_2 is a nitrogen atom, and represents a hydrogen atom, and

R_4 does not exist when X_2 is an oxygen atom];



(6)

[wherein X_3 is an oxygen atom or nitrogen atom, and

p is the number corresponding to X_3].

Technical Problem

[0005]

The present invention provides a new application for the aforementioned D-pantothenyl alcohol.

Solution to Problem

[0006]

The present inventors have found from experiments that D-pantothenyl alcohol has a melanogenesis inhibitory action, and have completed the present invention. In other words, a first aspect of the present invention is a melanogenesis inhibitor containing D-pantothenyl alcohol. Another aspect of the present invention is a skin-whitening cosmetic containing the aforementioned melanogenesis inhibitor.

cosmetics 5 to 68 was calculated (ΔL* value = L* value of the applied site of the skin-whitening cosmetic 5 (or the skin-whitening cosmetics 6 to 68) - L* value of the applied site of the comparative cosmetic 4). The greater the degree of pigmentation is, the lower the L* value is. Accordingly, it is possible to determine that the larger the ΔL* value is, the more improved the pigmentation has been. The number of days taken for the calculated ΔL* value to become 0.4 and the ΔL* value measured/calculated 24 hours after completion of the application in Day 21 are shown in Tables 9 to 19.

[0085]

Furthermore, the cosmetics 6' to 68' each were prepared in the same manner as the cosmetic 5 except that the D-pantothenyl alcohol formulated into the cosmetics 6 to 68 was replaced with water, in order to calculate the ΔL* value and the number of days taken for the ΔL* value to become 0.4 for the cosmetics 6 to 68 containing none of the skin-whitening ingredient D pantothenyl alcohol, i.e., containing only any of the aforementioned plant extract or an existing skin-whitening compound as a skin-whitening ingredient. Subsequently, in the same manner as in the aforementioned <Evaluation in Skin-whitening Rate>, the comparative cosmetic 4 was used as a control, and the number of days taken for the ΔL* value to become 0.4 as well as the L* value and ΔL* value measured 24 hours after completion of the application in Day 21 was obtained. The ΔL* values measured/calculated 24 hours after completion of the application in Day 21 are shown as "ΔL* value for no D-pantothenyl alcohol" in Tables 9 to 19. The number of days taken for the ΔL* value to become 0.4 was more than 21 days in every case.

Claims:

1.

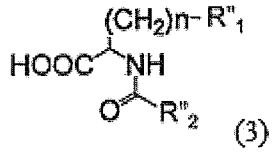
A cosmetic comprising an agent comprising D-pantothenyl alcohol and one or more selected from the following skin-whitening agents (A) to (G) when used in skin-whitening:

(A) one or more plant extracts having a melanogenesis inhibitory action selected from the group consisting of *Uncaria gambir* extract, *Isodon japonicus* extract, *Echinacea angustifolia* leaf extract, *Lithospermum erythrorhizon* root extract, *Carthamus tinctorius* flower extract, *Persea gratissima* fruit extract, *Abelmoschus esclentus* fruit extract, *Actinidia chinensis* fruit extract, *Alpinia speciosa* leaf extract, *Saponaria officinalis* extract, *Caprifoliaceae* extract, green tea extract, *Benincasa cerifera* seed exract, *Allium sativum* extract, *Citrus aurantifolia* fruit juice extract, natto extract, *Citrus aurantium dulsis* fruit extract, *Valeriana officinalis* extract, *Cucumis sativus* extract, *Prunus armeniaca* extract, *Gardenia florida* extract, *Citrus grandis* fruit extract, *Arctium lappa* root extract, black tea extract, *Equisetum arvense* extract, *Malva sylvestris* extract, *Jujube* extract, *Solanum lycopersicum* extract, *Daucus carota sativa* extract, *Hoelen* extract, *Lilium candidum* bulb extract, *Litchi chinensis* extract, *Lactuca scariola sativa* leaf extract, *Citrus medica limonum* fruit extract, and royal jelly extract;

(B) a 4-alkyl resorcinol;

(C) a compound represented by the following general formula (1);

R'_3 represents a hydrogen atom or C_1-C_4 linear or branched alkyl group];



(3)

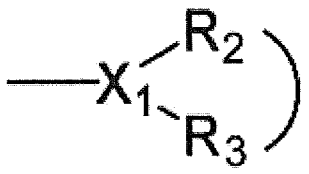
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R''_2 represents a C_5-C_{12} aromatic group which optionally is unsubstituted or contains a substituent,

the aromatic group is preferably a phenyl group,

n represents an integer of 1 or 2, and

the substituent is a C_1-C_4 alkyl group, C_1-C_4 alkoxy group, or phenyl group];



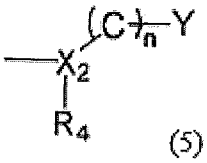
(4)

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the substituent is selected from a C_1-C_4 alkyl, C_1-C_4 alkyloxy, hydroxyl, amino, and oxo, and

the carbon number of the heterocyclic ring is 3 to 5];



(5)

[wherein X_2 is a nitrogen atom or oxygen atom,

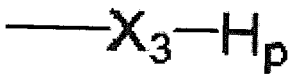
n is an integer of 1 to 5,

n is preferably an integer of 1 to 3,

Y is a hydroxyl group or amino group,

R_4 exists when X_2 is a nitrogen atom, and represents a hydrogen atom, and

R_4 does not exist when X_2 is an oxygen atom];



(6)

[wherein X_3 is an oxygen atom or nitrogen atom, and

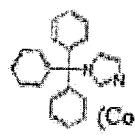
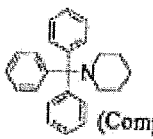
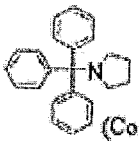
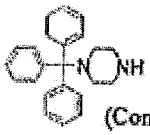
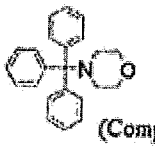
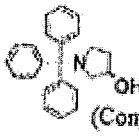
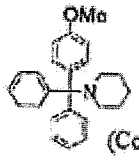
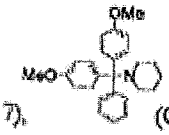
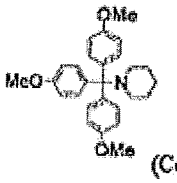
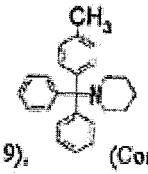
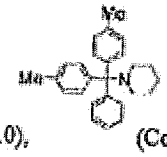
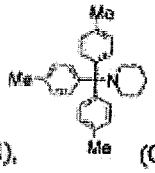
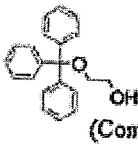
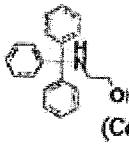
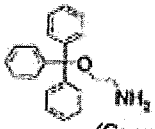
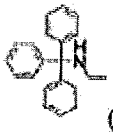
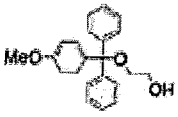
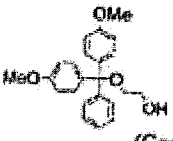
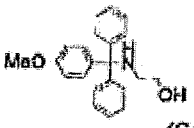
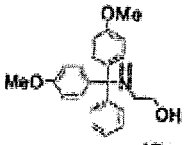
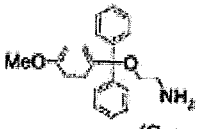
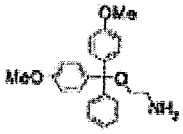
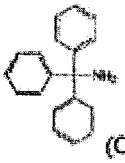
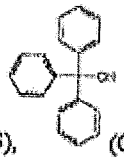
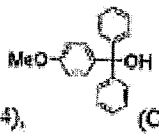
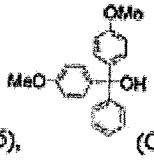
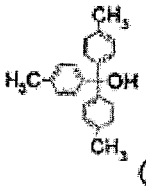
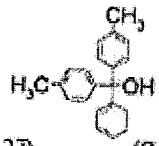
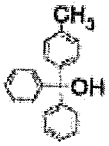
p is the number corresponding to X_3].

2.

The cosmetic according to claim 1, wherein the plant extract is one or more selected from *Uncaria gambir* extract, *Isodon japonicus* extract, *Echinacea angustifolia* leaf extract, *Lithospermum erythrorhizon* root extract, and *Carthamus tinctorius* flower extract.

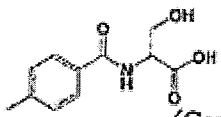
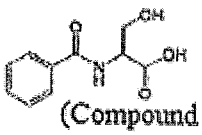
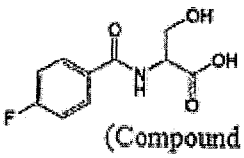
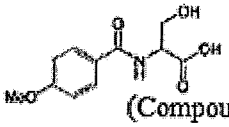
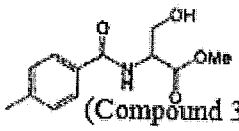
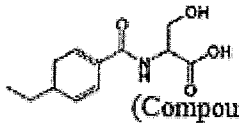
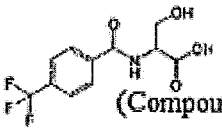
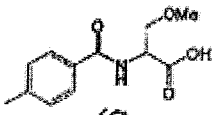
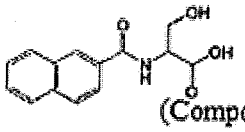
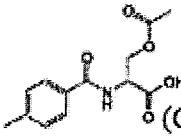
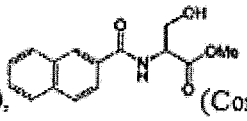
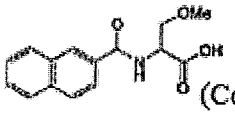
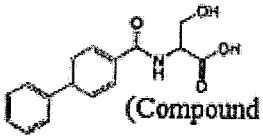
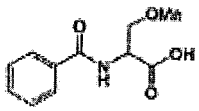
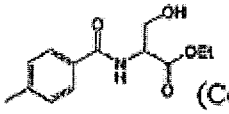
3.

The cosmetic according to claim 1, wherein the compound represented by the general formula (1) comprises one or more selected from the following compounds 1 to 29:


(Compound 1),

(Compound 2),

(Compound 3),

(Compound 4),

(Compound 5),

(Compound 6),

(Compound 7),

(Compound 8),

(Compound 9),

(Compound 10),

(Compound 11),

(Compound 12),

(Compound 13),

(Compound 14),

(Compound 15),

(Compound 16),

(Compound 17),

(Compound 18),

(Compound 19),

(Compound 20),

(Compound 21),

(Compound 22),

(Compound 23),

(Compound 24),

(Compound 25),

(Compound 26),

(Compound 27),

(Compound 28),

(Compound 29).

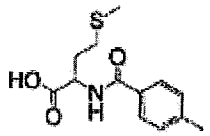
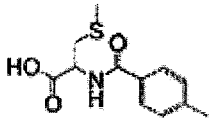
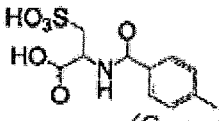
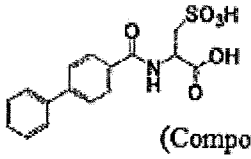
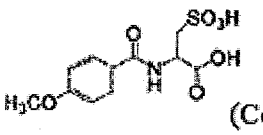
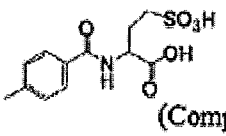
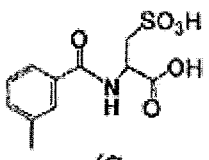
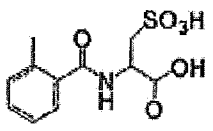
4.

The cosmetic according to claim 1, wherein the compound represented by the general formula (2) comprises one or more selected from the following compounds 30 to 44:


(Compound 30),

(Compound 31),

(Compound 32),

(Compound 33),

(Compound 34),

(Compound 35),

(Compound 36),

(Compound 37),

(Compound 38),

(Compound 39),

(Compound 40),

(Compound 41),

(Compound 42),

(Compound 43),

(Compound 44).

5.

The cosmetic according to claim 1, wherein the compound represented by the general formula (3) comprises one or more selected from the following compounds 45 to 52:


(Compound 45),

(Compound 46),

(Compound 47),

(Compound 48),

(Compound 49),

(Compound 50),

(Compound 51),

(Compound 52).

6.

A skin-whitening method, comprising the steps of whitening skin by contacting an agent comprising D-pantothenyl alcohol with the skin; and whitening the skin by contacting one or more selected from the following skin-whitening agents (A) to (G) with the skin:

(A) one or more plant extracts having a melanogenesis inhibitory action selected from the group consisting of *Uncaria gambir* extract, *Isodon japonicus* extract, *Echinacea angustifolia* leaf extract, *Lithospermum erythrorhizon* root extract, *Carthamus tinctorius* flower extract, *Persea gratissima* fruit extract, *Abelmoschus esclentus* fruit extract, *Actinidia chinensis* fruit extract, *Alpinia speciosa* leaf extract, *Saponaria officinalis* extract, *Caprifoliaceae* extract, green tea extract, *Benincasa cerifera* seed exract, *Allium sativum* extract, *Citrus aurantifolia* fruit juice extract, natto extract, *Citrus aurantium dulsis* fruit extract, *Valeriana officinalis* extract, *Cucumis sativus* extract, *Prunus armeniaca* extract, *Gardenia florida* extract, *Citrus grandis* fruit extract, *Arctium lappa* root extract, black tea extract, *Equisetum arvense* extract, *Malva sylvestris* extract, *Jujube* extract, *Solanum lycopersicum* extract, *Daucus carota sativa* extract, *Hoelen* extract, *Lilium* candidum bulb extract, *Litchi chinensis* extract, *Lactuca scariola sativa* leaf extract, *Citrus medica limonum* fruit extract, and royal jelly extract;

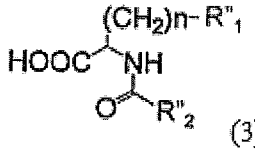
(B) a 4-alkyl resorcinol;

(C) a compound represented by the following general formula (1);

(D) a compound represented by the following general formula (2);

(E) a compound represented by the following general formula (3);

(F) an ursolic acid phosphate ester; and



(3)

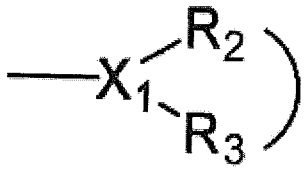
[wherein R''_1 represents -SH, $-SO_3H$, $-S-S-X_1$, $-S-X_2$, $-SO-X_3$, or $-SO_2-X_4$, in which X_1 to X_4 are independently a hydrogen atom or C_1-C_8 aliphatic hydrocarbon group,

R''_2 represents a C_5-C_{12} aromatic group which optionally is unsubstituted or contains a substituent,

the aromatic group is preferably a phenyl group,

n represents an integer of 1 or 2, and

the substituent is a C_1-C_4 alkyl group, C_1-C_4 alkoxy group, or phenyl group];



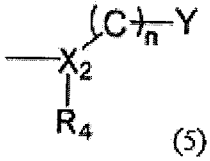
(4)

[wherein X_1 is a nitrogen atom,

R_2 and R_3 are bound to each other to form, together with X_1, a C_2-C_8 heterocyclic ring which optionally has a substituent,

the substituent is selected from a C_1-C_4 alkyl, C_1-C_4 alkyloxy, hydroxyl, amino, and oxo, and

the carbon number of the heterocyclic ring is 3 to 5];



(5)