We claim:

1. Cocrystals of Methylxanthine with Stilbenoid as coformer and the polymorphic forms thereof.

2. The cocrystals as claimed in claim 1, wherein said cocrystal exhibits a pleasant taste and is free from the bitterness of Methylxanthine.

3. The cocrystals as claimed in claim 1, wherein the Methylxanthine is selected from Theacrine, Theobromine, Methylliberine, Caffeine, Paraxanthine or Theophylline and the like alone or mixtures thereof.

4. The cocrystals as claimed in claim 3, wherein the Stilbenoid is selected from Pterostilbene or Resveratrol.

5. The cocrystals as claimed in claim 4, wherein the Methylxanthine and Stilbenoid are in the ratio 1:4 to 4:1, preferably 1:1.

6. The cocrystal as claimed in claim 5, comprising:

   a) Theacrine: Pterostilbene (1:1) characterized by ^{1}HNMR (400 MHz, dmso-d6): δ 3.19 (3H, s), 3.39 (3H, s), 3.52 (3H, s), 3.63 (3H, s), 3.76 (6H, s), 6.36 (1H, s), 6.70 (2H, s), 6.76 (2H, d, *J* = 8.4Hz), 6.93 (1H, d, *J* = 16.4Hz), 7.15 (1H, d, *J* = 16.4Hz), 7.41(2H, d, *J* = 8.4Hz), 9.59 (1H, s); with DSC exhibiting a sharp endotherm at 146.22 ^{o}C;

   b) Theobromine: Pterostilbene (1:1) characterized by ^{1}HNMR (400 MHz, dmso-d6): δ 3.33 (3H, s), 3.76 (6H, s), 3.84 (3H, s), 6.36 (1H, t, *J* = 2.4Hz), 6.71 (2H, t, *J* = 2.4Hz), 6.77 (2H, d, *J* = 8.8Hz), 6.94 (1H, d, *J* = 16.4Hz), 7.15 (1H, d, *J* = 16.4Hz), 7.41(2H, d, *J* = 8.8Hz), 7.97 (1H, s), 9.60 (1H, s), 11.12 (1H, s); with DSC exhibiting a

sharp endotherm at 93.0 ºC;

c) Methylliberine: Pterostilbene (1:1) characterized by ^{1}HNMR (400 MHz, dmso-d6): δ 3.21 (3H, s), 3.31 (3H, s), 3.40 (3H, s), 3.76 (6H, s), 4.01 (3H, s), 6.36 (1H, t, J= 2 Hz), 6.71 (2H, d, J = 1.6 Hz), 6.76 (2H, d, J = 8.8 Hz), 6.93 (1H, d, J = 16.8 Hz), 7.15 (1H, d, J =16.8 Hz), 7.41 (2H, d, J = 8.8 Hz), 9.59 (1H, s); with DSC exhibiting a sharp endotherm at 132.54 ºC;

d) Caffeine: Pterostilbene (1:1) characterized by ^{1}HNMR (400 MHz, DMSO-d6): δ 3.20 (3H, s), 3.40 (3H, s), 3.76 (6H, s), 3.86 (3H, s), 6.36 (1H, t, J= 2.0 Hz), 6.71 (2H, d, J = 2.0 Hz), 6.76 (2H, d, J = 8.8 Hz), 6.93 (1H, d, J = 16.4 Hz), 7.15 (1H, d, J = 16.4 Hz), 7.41 (2H, d, J = 8.4 Hz), 7.99 (1H, s), 9.59 (1H, s); with DSC exhibiting a sharp endotherm at 117.30ºC;

e) Paraxanthine: Pterostilbene (1:1) characterized by ^{1}HNMR (400 MHz, dmso-d6): δ 3.17 (3H, s), 3.76 (6H, s), 3.85 (3H, s), 6.36 (1H, s), 6.71 (2H, s), 6.76 (2H, d, J = 8.4 Hz), 6.94 (1H, d, J = 16.8 Hz), 7.15 (1H, d, J = 16.4 Hz), 7.41 (2H, d, J = 8.0 Hz), 7.92 (1H, s), 9.59 (1H, s), 11.84 (1H, s), PXRD: 11.31 (12.8%), 15.88 (71.8%), 19.86 (18.7%), 21.28 (26.0%), 22.52 (33.6%), 24.9 (83.2%), 26.96 (100%), 29.00 (12.3%), 29.21 (19.3%), 30.41 (14.3%), 32.45 (9.9%), 38.8 (6.5%), 40.68 (5.2%), 44.84 (4.9%), 50.55 (3.6%), 55.48 (4.4%) ± 0.2° 2Θ. DSC: A sharp endotherm observed at 204.17 ºC;

f) Theophylline: Resveratrol (1:1) characterized by ^{1}HNMR (400 MHz, dmso-d6): δ 3.24 (3H, s), 3.44 (3H, s), 6.12 (1H, t, J = 2 Hz), 6.39 (2H, d, J = 2 Hz), 6.75 (2H, d, J = 8.4 Hz), 6.81 (1H, d, J = 16.4 Hz), 6.92 (1H, d, J = 16.4 Hz), 7.38 (2H, d, J = 8.4 Hz), 8.04, (1H, s) 9.21 (2H, s), 9.54 (1H, s), 13.57 (1H, s); with DSC exhibiting a sharp endotherm at 201.95ºC;

g) Theacrine: Pterostilbene cocrystal polymorphic Form I, characterized by an X-ray powder diffraction pattern having one or more peaks with relative intensity at about 12.78 (100%), 14.18 (90.2%), 14.69 (17.9%), 15.55 (19.0%), 17.45 (11.8%), 19.04 (9.1%), 22.28 (12.0%), 23.46 (14.4%), 27.90 (5.0%), 28.80 (5.6%), 29.50 (7.3%), 31.50 (7.6%), 33.04 (10.1%), 38.90 (14.2%), 41.02 (6.1%), 41.93 (4.7%), 53.16 (4.5%), 72.73 (8.4%) ± 0.2° 2Θ;

h) Theacrine: Pterostilbene cocrystal polymorphic Form II, characterized by an X-ray powder diffraction pattern having one or more peaks with relative intensity at about 10.98 (4.8%),13.06 (33.6%), 14.45 (65.4%), 15.09 (38.5%), 15.85 (32.3%), 17.71 (6.5%), 19.18,(13.9%), 20.21 (28.7%), 21.44 (6.8%), 22.58 (11.1%), 23.73 (9.5%), 26.40, (59.7%), 27.21 (100%), 28.29 (10.0%), 29.12 (2.7%), 29.87 (3.6%), 31.76 (5.8%), 32.10 (6.2%), 33.33 (6.1%), 35.73 (1%), 37.02 (1.5%), 39.20 (9.0%), 40.66, (1.0%), 45.00 (1.4%), 46.38 (1.8%), 47.41 (1.2%), 48.05 (1.7%), 54.61 (2.8%), 55.46 (2.4%) and 72.69 (2.5%) ± 0.2° 2Θ;

i) Theacrine: Pterostilbene cocrystal polymorphic Form III, characterized by an X-ray powder diffraction pattern having one or more peaks with relative intensity at about 12.90 (64.2%), 14.32 (100%), 15.64 (13.3%), 17.45 (8.2%), 19.17 (6.6%), 21.69 (10.5%), 22.38 (7.9%), 23.58 (10.0%), 25.07 (7.0%), 26.19 (6.1%), 26.98,(9.6%), 28.86 (1.9%), 29.59 (2.8%), 31.58 (2.7%), 33.12 (3.7%), 38.98 (7%), 41.10 (1.4%), 43.62 (1.1%), 47.80 (1.0%), and 72.70 (2.7%) ± 0.2° 2Θ;

j) Theacrine: Pterostilbene cocrystal polymorphic Form IV, characterized by an X- ray powder diffraction pattern having one or more peaks with relative intensity at about 12.98 (100%), 14.38 (97.8%), 15.72 (18.6%), 17.66 (14.9%), 19.38 (10.3), 21.72 (7.5%), 22.47 (9.1%), 23.69 (12.8%), 25.14 (8.1%), 26.16 (11.6%), 27.00,(17.2%), 28.03 (2.5%), 29.69 (4.4%), 30.83 (1.1%), 31.66 (4.3%), 33.25 (7.2%), 36.88 (1.1%), 39.12 (11.6%), 41.21 (2.1%), 43.62 (1.3%),

44.06 (1.7%), 44.83, (1.3%), 45.99 (1.0%), 47.30 (1.1%), 47.95 (1.9%), 49.04 (1.0%), 53.36 (1.5%), 72.68 (3.3%) and 88.31 (1.0%) ± 0.2° 2Θ;

k) Theacrine: Pterostilbene cocrystal polymorphic Form V, characterized by an X-ray powder diffraction pattern having one or more peaks with relative intensity at about 12.83 (17.0%), 14.33 (100%), 15.72 (18.8%), 19.15 (3.5%), 20.06 (3.5%), 22.10 (8.8%), 23.55 (6.5%), 27.17 (5.8%), 31.73 (4.8%), 33.71 (2.0%), 37.88, (1.4%), 39.19 6.2%), 41.07 (1.4%), 41.54 (2.2%), 43.86 (1.0%) ± 0.2° 2Θ;

l) Theobromine: Pterostilbene cocrystal polymorph Form I characterized by an X-ray powder diffraction pattern having one or more peaks with relative intensity at about 11.75 (30.21), 13.38, (63.19), 15.3 (77.89), 17.31 (10.20%), 19.35 (95.4%), 23.46 (44.32%), 26.98 (100%), 29.35 (14.13%), 31.65 (6.50%), 34.30 (2.19%), 35.93 (6.20%), 39.15 (5.40%), 40.67 (3.61%), 42.08 (3.2%), 44.61 (2.87%), 48.89 (2.4%), 50.06 (2.9%), 52.53 (2.36%), 55.83 (2.22%), 72.73 (6.96%), 88.42 (2.35%);

m) Methylliberine: Pterostilbene cocrystal Form I, which is characterized by an X-ray powder diffraction pattern having one or more peaks at about 12.25 (87.7%), 13.33 (100%), 15.52 (24.8%), 16.44 (6.6%), 17.98 (6.0%), 19.99 (16.5%), 21.12 (8.6%), 21.99 (5.2%), 23.93 (4.5%), 25.44 (6.6%), 27.05 (11.1%), 28.76 (3.9%), 34.75 (3.8%), 37.81 (5.8%), 40.49 (3.0%), 42.78 (4.9%), 44.64 (3.9%), 72.73 (5.8%) ± 0.2° 2Θ;

n) Methylliberine: Pterostilbene cocrystal Form II, which is characterized by an X-ray powder diffraction pattern having one or more peaks with relative intensity at about 12.43 (68.3%), 13.49 (100%), 15.65 (11.9%), 16.60 (11%), 18.12 (4.6%), 20.13 (15.3%), 21.30 (7.2%), 22.16 (6.2%), 23.34 (1.5%), 24.08 (4.4%), 25.69,(17%), 26.91 (16.8%), 27.31(22.4%), 29.91 (1.3%), 30.82 (1.2%), 31.29 (1.6%), 34.51 (1.3%), 36.24 (1.4%), 37.94 (3.7%), 42.82 (1.0%), 44.67 (1.1%), 72.70 (2.5%) ± 0.2° 2Θ;

o) Methylliberine: Pterostilbene cocrystal Form III, which is characterized by an X- ray powder diffraction pattern having one or more peaks with relative intensity at about 13.20 (100%), 15.35 (16.1%), 16.50 (11.8%), 17.90 (3.2%), 19.88 (13.3%),20.83 (3.9%), 22.06 (5.0%), 23.05 (1.3%), 23.88 (4.1%), 25.60 (14.9%), 36.03 (1.1%), 42.05 (1.2%), and 72.67 (7.7%) ± 0.2° 2Θ;

p) Methylliberine: Pterostilbene cocrystal Form IV, which is characterized by an X-ray powder diffraction pattern having one or more peaks with relative intensity at about 12.00 (43.3%), 12.48 (91.5%), 13.63 (84.8%), 15.32 (11.0%), 16.77 (24.7%), 18.34 (10.8%), 19.02 (11.1%), 20.22 (20.4%), 21.44 (16.9%), 22.32, (14.8%), 23.34 (3.9%), 24.24 (10.5%), 25.84 (100%), 27.48 (81.2%), 33.31 (2.7%), 34.78 (5.1%), 35.01 (4.9%), 36.44 (3.5%), 38.10 (8.2%), 40.78 (1.5%), 43.12 (4.9%), 46.52 (2.7%), 47.75 (1.7%), 49.85 (1.4%) ± 0.2° 2Θ;

q) Caffeine: Pterostilbene cocrystal Form I, characterized by an X-ray powder diffraction pattern having one or more peaks at 11.90 (28.6%), 15.03 (100%), 16.81 (51.2%), 19.06 (53.5%), 21.65 (44.4%), 25.81 (94.2%), 26.35 (91.04%), 28.16 (10.4%), 29.54 (6.7%), 31.32 (4.8%), 32.52 (10.3%), 35.74 (3.6%), 36.99 (3.8%), 39.36 (3.7%), 40.93 (7.3%), 43.66 (5.7%), 45.45 (3.6%), 49.83 (2.1%), 72.74 (8.5%) and 88.35 (3.3%) ± 0.2° 2Θ;

r) Caffeine: Pterostilbene cocrystal polymorphic Form II, characterized by an X- ray powder diffraction pattern having one or more peaks with relative intensity at about 12.83 (2.19%), 17.04 (5.43%), 19.41 (5.24%), 22.25 (6.28%), 26.31 (100%), 28.67 (3.8%), 30.04 (1.6%), 32.96 (2.3%), 41.34 (1.1%), and 53.94 (1.7%) ± 0.2° 2Θ;

s) Caffeine: Pterostilbene cocrystal polymorphic Form III, characterized by an X- ray powder diffraction pattern having one or more peaks with relative intensity at about 10.53 (18.3%), 12.18 (4.9%), 14.01 (23.04%), 15.56 (25.3%), 17.22 (21.0%), 19.35 (16.7%), 22.13 (13.7%), 24.02 (4.3%), 26.51 (100%), 28.57 (20.4%), 30.22 (4.0%), 31.82 (4.1%),

36.23 (1.1%), 43.3 (1.8%), 46.52 (1.1%), 53.52 (1.1%) and 72.72 (2.2%) ± 0.2° 2Θ;

t) Caffeine: Pterostilbene cocrystal polymorphic Form IV, characterized by an X-ray powder diffraction pattern having one or more peaks with relative intensity at about 12.00 (43.3%), 12.48 (91.5%), 13.63 (84.8%), 15.32 (11.0%), 16.77 (24.7%), 18.34 (10.8%), 19.02 (11.1%), 20.22 (20.4%), 21.44 (16.9%), 22.32, (14.8%), 23.34 (3.9%), 24.24 (10.5%), 25.84 (100%), 27.48 (81.2%), 33.31 (2.7%), 34.78 (5.1%), 35.01 (4.9%), 36.44 (3.5%), 38.10 (8.2%), 40.78 (1.5%), 43.12 (4.9%), 46.52 (2.7%), 47.75 (1.7%), 49.85 (1.4%) ± 0.2° 2Θ;

u) Paraxanthine: Pterostilbene cocrystal, characterized by an X-ray powder diffraction pattern having one or more peaks with relative intensity at about PXRD: 11.31 (12.8%), 15.88 (71.8%), 19.86 (18.7%), 21.28 (26.0%), 22.52 (33.6%), 24.9 (83.2%), 26.96 (100%), 29.00 (12.3%), 29.21 (19.3%), 30.41 (14.3%), 32.45 (9.9%), 38.8 (6.5%), 40.68 (5.2%), 44.84 (4.9%), 50.55 (3.6%), 55.48 (4.4%) ± 0.2° 2Θ;

v) Theophylline: Resveratrol cocrystal, characterized by an X-ray powder diffraction pattern having one or more peaks with relative intensity at about PXRD: 10.30 (9.4%) , 12.40 (30.7%), 13.81 (100%), 15.21 (9.4%), 16.27 (14.1%), 17.21 (4.5%), 19.22 (21.1%), 20.76 (13.0%), 22.30 (8.4%), 23.52 (8.4%), 24.84 (47.9%), 25.36 (33.6%), 26.64 (7.4%), 28.26 (8.6%), 30.68 (8.9%), 32.88 (3.3%), 34.96 (1.1%), 36.46 (1.5%), 37.61 (1.1%), 38.45 (2.0%), 39.84 (1.4%), 42.16 (2.3%), 45.91 (1.3%), 52.26 (1.3%), 72.73 (4.1%) and 88.35 (1.2%) ± 0.2° 2Θ.

7. A process for the preparation of cocrystal and its polymorphs as claimed in claim 5, comprising;
   (a) Dissolving the coformer Stilbenoid in a solvent at 35-55 ºC to obtain clear solution followed by addition of Methylxanthine;
   (b) Stirring the above mixture at a temperature of 40-60 ºC to obtain a clear solution.

(c) Gradually cooling the above solution to ambient temperature and maintaining said temperature for a period of 10-20 h to allow precipitation of the cocrystal; and

(d) Separating the co-crystal formed on standing followed by filtering, washing and drying.

8. The process as claimed in claim 7, wherein the solvent for the process selected from C1-C5 alcohols, water, acids selected from formic acid, acetic acid, propanoic acid, butyric acid; ethers; esters; ketones and the like alone or mixtures thereof.

9. A process for the preparation of cocrystals as claimed in claim 5, wherein said cocrystal may be prepared by mechanical grinding the mixture of Methylxanthine and coformer Stilbenoid to obtain the desired cocrystal.

10. The process as claimed in claim 9, wherein the Methylxanthine is selected from Theacrine, Theobromine, Methylliberine, Caffeine, Paraxanthine and Theophylline and the like alone or mixtures thereof; the Stilbenoid is selected from Pterostilbene or Resveratrol, preferably in 1:1 ratio.

11. A nutraceutical or a pharmaceutical composition comprising an effective amount of the cocrystal or its polymorphs of Methylxanthine with coformer Stilbenoid as claimed in claim 5 and one or more acceptable excipients.

12. The composition as claimed in claim 11, wherein the excipients are selected from one or more of one or more of a binder, filler, lubricant, emulsifier, suspending agent, sweetener, preservative, buffer, wetting

agent, disintegrant, diluents, binders, flavours, colours, suitable polymers effervescent agent, additive, and mixtures thereof.

13. The composition as claimed in claim 12, wherein the additive is selected from the group consisting of microcrystalline cellulose, lactose, sucrose, fructose, glucose, dextrose, dibasic calcium phosphate, calcium sulfate, cellulose, methylcellulose, cellulose derivatives, kaolin, mannitol, lactitol, maltitol, xylitol, sorbitol, sugar alcohols, dry starch, dextrin, maltodextrin, polysaccharides, and mixtures thereof.

14. The nutraceutical or the pharmaceutical composition as claimed in claim 11, wherein the composition is in the form of dosage form selected from the group consisting of a tablet, capsule, powder, suspension, and lozenge.

15. A pharmaceutical composition comprising an effective amount of the cocrystal or its polymorphs of Methylxanthine with coformer Stilbenoid as claimed in claim 5 and one or more acceptable excipients for dermatological use.