

IMPROVED PROCESS FOR DRY FLOWER CRAFT

FIELD OF INVENTION:

The present invention relates to an improved process for floral botanical collage decoupage

5 PRIOR ART:

In the earlier art, process for, preparing/decorating object with pressed dried flower was already known.

10 The said known process consists of mounting of dry flowers in artistic manner or any other desired manner on any object mostly paper.

The said known process has certain disadvantages which are given below:

- 15 1. Colour texture, shape, smooth contour of dried vegetation obtained were of very poor quality.
2. Additionally seeds, weeds, grass, bamboo, tendrils, Sola wood, Natural fibres and other dry botanicals elements which are essential to reduce the cost and induce better design with utility of botanicals of variable source to
20 complete the definition of collage were not used.
3. The obtained product is very poor in hand craft technical aspect and of poor design, and therefore does not appeal to customers .
- 4) Use of Stencils to cut the botanicals was not used ever ,hence decoupage of botanicals is a new invention.
- 25 4. Botanical decoupage and collage not in existence.
5. Technique of drying and pressing of botanicals not used which can removes the disadvantages towards colour retention and texture for longer period for dried botanicals almost 4 times

According to present invention it has been surprisingly found that use of mixture of desiccant---silicagel+ silver sand+non is a crux of present invention.

Both the drying technique & craft technology along with the concept of
5 Floral collage decoupage is a new invention. against pressed dry flower craft as known prior art

Floral Resin laminate is an invention.

Thus by adopting the process of (floral resin lamination) in the present invention we stop the further deterioration by arresting oxidation of colour
10 pigments as the dried botanical are permanently embedded in harden resin, hence no excess of atmospheric air for it.

Where in dried and pressed flowers or botanicals are hand crafted on any surface such as on paper . with help of stencil to creates **floral decoupage** and without use of stencils but with combination of other botanicals like
15 bamboo, grass, weeds, seeds, stem, tendrils, fiber, solawood to creates **floral collage** .The colour .texture and shape of dried botanicals are of superior quality and more stable for a longer period .The floral handicraft created by above improved process of Floral collage decoupage is not of poor quality and appeals better to eye.

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These and other objects have been obtained by process of present invention.

SUMMARY OF THE INVENTION:

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According to present invention there is provided an improved process for floral collage decoupage-(an improved process of pressed dry flower craft) which comprises:

- (i) cutting craft media (dry botanicals) by hand with card paper stencils and mounting the same on any surface of product with combination of other botanical elements like bamboo, grass, weeds, seeds, stem, tendrils, fiber, solawood in any desired manner including artistic manner; along with better drying and pressing technology which comprises reducing the oxidation and isomerisation of carotenoid and Anthocyanin and hence reducing colour loss while drying and storage of vegetation and also during crafting of the vegetation ;
 - (ii) making stencil of cheapest material such as cardboard and paper, and hand cutting to make cutouts (motiff);
 - (iii) shaping the petals in any desired shaped and synchronized pasting the same with known low ph alkaline adhesives; characterized is that botanicals are dried prior to floral collage decoupage by electric oven or micro oven drying with the use of mixture of dessicant-silicagel + silversand + non iodised salts.(1:1:1 ratio)
- Method for drying flowers involves covering botanicals with something that draws moisture out, generally referred to as a *dessicant*
- The drying is enhanced to reduce time to about one to two hours instead of 3 days for conventional electric oven and dried in silica gel dessicant mixture, in microven for less than 24 hours and storing the same under in a cold, dry and dark place in a vaccum suctioned container .

The organic manure contains nitrogen, phosphorous and potassium as nutrients to give in built 20% low pH in uniform relative availability to the (bio-physiological system and) structured component of the plant for color stability and vegetation in dried botanicals, Which is most important for floral collage
5 decoupage

The said organic manure is used to reduce 20 % acidity of plant structure & its bio-physiological system and thereby reducing the senescence process that is aging process to obtain best natural colored texture and hence dried vegetation
10 grown in organic manure are better in texture and color and more stable for longer duration to form dried botanicals as craft ingredients of almost 4 times better.

The above conditions reduces the oxidation and isomerisation of carotenoid and
15 anthocyanin and other colour pigments and hence reduced colour loss while drying and storage of vegetation and also during crafting of the vegetation.

During storage exclusive of oxygen, light and humidity is facilitated to stop decomposition of dried botanicals and crafted product. Hence vacuum storage in
20 dark, dry and cool place is most important

Three different pigments - chlorophyll, flavonoids, and carotenoids -are mixed in different proportions, to give color and shade to flowers.

Flavonoids are divided into two groups - pigmented anthocyanins and colorless
25 copigments.

(i) Anthocyanin pigments take their color from the range of red, purple, or blue, depending on their pH. Anthocyanins are partly responsible for the red and purple colors.

(ii) The carotenoids impart yellow, purple and orange colors. There are 300 types of carotenoids of which main ones are lycopene, β -carotene and α -tocopherol.

Among three, chlorophyll has a more stable molecular structure compared to Anthocyanin and Carotenoids.

And among two, Carotenoids have still more sensitive in structure stability.

10 Colour changes depend upon the interplay of isomerisation and oxidation

The main causes of colour degradation of dried botanicals during processing are isomerization and oxidation (enzymatic and non enzymatic)

This can be influenced by many factors.

The presence of humidity accelerates destruction of all type of colour pigments present in all vegetation in natural form

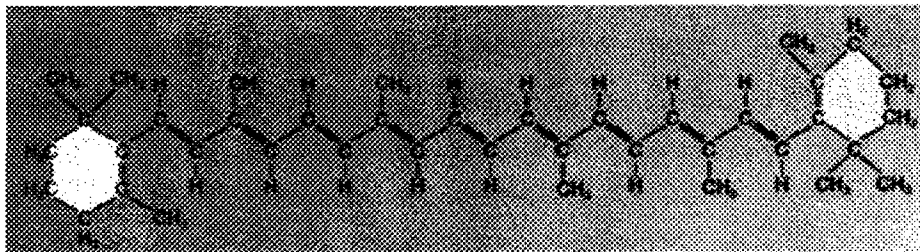
Both β -carotene and α -tocopherol are destroyed by **oxidation**. This reaction is accelerated by ultraviolet light and heat, and becomes a photochemical process.

The destruction of β -carotene in forages is first an enzymatic process and is due to a lipoxygenase system. Lipoxygenases, a group of isoenzymes, are present at varying levels in a wide number of species of plants. Enzymatic destruction of carotene begins when the forage (vegetation) is chopped or heated while cooking

or drying Increased chopping and grinding also accelerates enzymatic destruction, as does raising ambient temperature and humidity

- During drying, the losses of b-carotene and a-tocopherol can equally be due to
- 5 isomerization and oxidation

Degradation because of isomerisation of carotenoids



Structure of B-Carotene

- 10 As a consequence, the two isomers cis & trans demonstrate substantial variations of their thermodynamic and kinetic constants and also colour properties. A possible explanation for these characteristics is presented, making use of molecular modelling and taking into account the three-dimensional structures of the pigments.

- 15 The figure above shows the structure of beta-carotene, one of the most abundant carotenoids. The system of alternating single and double bonds that is in this molecule runs along the hydrocarbon chain that connects the two benzene rings. the electrons of the double bonds actually migrate through the chain and also make this molecule an efficient absorber of light. The long system of
- 20 alternating double and

single bonds constitutes a conjugated system in which

the π electrons are effectively delocalised over the entire length of the polyene chain. This feature is

responsible for the molecular shape, chemical reactivity and light absorbing properties, and hence color of

- 5 carotenoids (Britton, 1995). At least seven conjugated double bonds are needed for the carotenoid to impart color. Each double bond in the polyene chain of a carotenoid can exist in two configurations, *trans* or *cis* geometrical isomers. Most carotenoids occur in nature predominantly or entirely in the all *trans* form (stable)

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The polyene chain is the cause of instability of carotenoids including their susceptibility to oxidation and geometric isomerization.

Heat, light and acids promote isomerization of *trans*-carotenoids to the *cis*-form

- 15 Beta-carotene. The conjugated system in which the π electrons are delocalised over the entire length of the polyene chain is responsible for the molecular shape, chemical and physical reactivity and the antioxidant

properties of carotenoids. It is sensitive to heat, light, alkaline pH value, oxygen. And duration of drying process.

- 20 Isomerization converts all-*trans* isomers to *cis*-isomers due to additional energy input and results in an unstable, energy-rich station. Heat induces isomerization of the all-*trans* to *cis* forms. The *cis*-isomers increase with temperature and processing time. A significant increase in the *cis*-isomers with a simultaneous decrease in the all-*trans* isomers can be observed in dehydrating botanicals
- 25 samples using the different dehydration methods. Subsequent isomerisation of Carotenoids leads to significant increase in the *cis*-isomers with a simultaneous

decrease in the all-*trans* isomers and hence into structural fragmentation results in a series of low molecular weight compounds which leads to decolouration of dried botanicals. During drying, the losses of β -carotene and a-tocopherol can equally be due to isomerisation. Due to the structural
5 configuration of these products, the removal of moisture must be accomplished in a manner that will be least deteriorating to the product's colour quality.

In general, dehydrated Botanicals have poor lycopene stability also and hence they have to be carefully processed and promptly placed in a thermally sealed containers and in inert & vacuum atmosphere for storage. Isomerisation
10 leads to decolourisation or fading of colours in decayed and dried botanicals

Oxidation of Carotenoids and degradation of colour

The Second major cause of loss of carotenoid is enzymatic and non enzymatic oxidation, which is dependent on availability of oxygen and structure of Carotenoid.

15 This is the reason for decolourisation or decomposition which gives brown colour to decomposed dried botanicals

Loss of colour or browning (decomposition) in dried vegetation is result of structural fragmentation of carotenoid. Subsequent fragmentation results in a series of unstable low molecular weight compounds which leads to colour decay
20 as at least seven conjugated double bonds are needed for the carotenoid in its structure to impart color.

*Chemical oxidation of carotenoid is non enzymatic Oxidation, causing oxidative rancidity, loss of color leading to Maillard reaction, causing
25 discolorization and change in texture. Here Reaction between carbonyl and amino groups leads to formation of intermediates known as Phenolic compounds or Melanoidins which leads to browning of color pigments which is*

non enzymatic.. Hence dried botanicals darkens on exposure to air as a result of conversion of phenolic compounds to brown melanoidins with foul smell

It is generally accepted that the initial stage of oxidation involves epoxidation and formation of apocarotenals.

- 5 Oxidation of Carotenoids leads to formation of epoxy carotenoids, apocarotenoids and hydroxy carotenoids which are Glycosylamines and Amadori products and are unstable low molecular structure leading to structural fragmentation ,Glycosylamines and Amadori products are unstable intermediates formed during the course of the Maillard reaction.

- 10 □ The concentration of the intermediates depends upon the reaction conditions (pH, temperature and time).Low pH,low temp and lesser time is favorable ,as it leads to lesser quantity of these intermediates.

- In the pH range 4-7, Amadori products undergo further degradation to give 1- and 3-deoxydicarbonyl compounds The % open chain form and rate of mutarotation increases with Temperature and pH.

Acidic or high pH influences the ratio of intermediate unstable products formation.

- The rate of brown color (decay)formation can be reduced by decreasing the pH

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Enzyme oxidation of carotenoid is because of Polyphenoloxidase, causing enzymic browning. Enzyme Lipoxygenase, causes oxidative rancidity. Enzyme Lipase, causes lipolytic rancidity. Enzyme Protease, causes gelation, flavor, foul smell and brown colour texture change.

- 25 This is enhanced by presence of atmospheric humidity / oxygen ,high Ph value or acidic conditions and variation in temperature .

Both the process leads to browning of dried vegetation and rancid foul smell from it, if proper storage is not implemented.

Hence low temperature, low PH, dark and vacuum storage condition is very important for keeping dried botanical and finished crafted elements for
5 prolonged storage.

There is two type of colour degradation firstly fading of colours because of isomerisation and secondly oxidation both enzymatic and non enzymatic leading to browning of colour & texture along with decay and foul smell in dried vegetation.

10 Hence technical improvement in the present technology with reasons for Drying and pressing of dried botanicals are as followings

1. Salt treatment reduces the humidity of vegetation by absorption (in desiccant mix with silica gel) ,reduce carotenoid degradation, because it facilitates fast drying in lesser time at low temperature of 45 to 47 degree.
- 15 2. Minimum oxygen exposure to avoid oxidation of carotenoid is important , hence vacuum storage, in cool temperature and non humid condition is most important for raw material preservation
3. Low temperature and quick drying between 45 to 47 degree is best for colour retention
- 20 4. Low pH for glue, blotting paper for drying and storage condition is most important
5. Dark condition while drying and storage is most important as photochemical process in presence of light and oxygen leads to degradation in structure of carotenoids and hence loss of colour . All the colour pigment of
- 25 carotenoid and Anthocyanin has light absorbing property as it plays an active role in Photosynthesis along with chlorophyll in presence of sunlight .

6)Organically grown vegetation which has 20% less acidity in its biophysiological system and structure of the plant.

This is the second portion of the claim to wards the technological crafting methodology of floral collage decoupage with improved craft ingredients of
5 colourful and good textured dried botanicals obtained by present dried and pressed process..

Decoupage is the technique of decorating a surface with pasting of cutouts
10 .Collage is an artistic composition of variable materials and objects pasted over a surface, often with undeifying lines and color of different botanical origins

We can have only floral decoupage or only floral collage or as third option a combination of both in design processing as application of the craft.

15 Floral Decoupage:

Floral Decoupage is the art of cutting(with stencils) a craft media(dry botanicals) and mounting it on any surface or product as object and when with a combination of other special botanical elements like bamboo, grass, weeds, seeds, stem, tendrils, fiber, solawood. Etc it formulates into floral
20 collage.

For the very first time we are coming up with floral collage decoupage

Here we are cutting (as cutouts)dried pressed floral petals, leaves, sola wood, leaf skeleton,Natural fibers and mounting them in an artistic combinations and
25 along with bamboo, grass, weeds, tendrils ,seeds, stem and other botanicals in

dried form as special effect to make a collage and both in combination forms :floral collage decoupage.

The main technique in craft of floral decoupage is nothing more than stencil cutting and pasting of dried botanicals in an artistic maner.

5 Decoupage is the arrangement of cutouts and pasting on the surface or object of handmade paper ,wood ,fibreglass and used to creative decoration . Collage is An artistic composition of variable materials and objects pasted over a surface, often with undeifying lines and color of different botanical origins.

10 We use stencil to make repeated similar cutouts of dried botanicals specially petals ,leaves.,Natural fibers, Solawood, Leaf skeleton,etc.

- The cheapest material is card board hard paper , but if you're going to use the stencil several times, make sure original drawing is duplicated as multiple stencil,as after a few uses, it will probably become damaged and

15 no longer capable of reproducing exactly the same design.

Below is the process to make the stencil

- Draw or trace a design onto your sheet (card board paper). Then, cut out the inside carefully with a new craft scissor, or blade.

Tools needed to create the shapes used in decoupage projects include a

20 pair of sharp, pointed scissors. Often the curved tips of nail scissors, along with their sharpness, are selected for intricate work. Good light and good vision are also needed to precisely cut the shapes without distortion or loss of shape and details.

Cut out motifs & Shape the Petals in the form of drop, heart, spindle, oval, circular or any other desirable shape as accurately as possible. Twigs, leaves, tendrils and other natural items are often important additions to the equation, too.

- 5 When doing the actual cutting of dried botanicals (flowers & leaves) the scissors should be tilted somewhat towards the right to obtain a slightly better edge. Scissors, razor blades or stencil knives, all sharp cutting tools, should be held at a slanted angle as you cut.

- 10 Pasting is important because the even application of an adhesive will insure the item will lie flat, without bubbles or puckers. Ideally, the cutout would be placed reversed on a sheet of clean paper or plastic and the adhesive lightly applied with needle over the entire reversed surface. Every point, tip and edge should be covered so that it will lie down perfectly. Play with the positions of the images so you get a desired look at the end when the entire pasting is done.

- 15 Tool for pasting and placement of botanicals on the surface is by six inch long needles holding it like pen in the right hand.

Paste the glued cut out botanicals on the surface to recreate the desired floral patterns.

- 20 Tim cut all individual petals before attaching them as a the flower ...one petal at a time.

Cut dry flower petals each individually and paste petals joined from the centre into desired patterns of flowers. Bamboo, Twigs, leaves and other natural items are often important additions to the equation, too. To make phenomenon of Botanical collage.

It is very important to use a neutral PH resin glue for pasting of flowers to avoid decolouration of dried botanicals at any stage of crafting.

FLORAL COLLAGE.

5 Same technique of pasting is used in this case but cutting of petals or flowers are not required and they are used as in its original shape and size.(stencils are not required). Then they are technically a floral collage .Just slight trimming or adjustments are required not reshaping .In addition seeds, weeds, grass, bamboo, tendrils, and other dry botanicals elements are used .

10 A botanical collage, is defined where many different botanicals as ingredients may be combined to create a textural and visually interesting arrangement on a surface or object.

As there is versatility in the species of flowers regarding to shapes and colors, They not only look original but beautiful and graceful too.

15 By using process to present invention

Floral laminates may be made on surface of glass, fiber glass, acrylic, wood ,ceramics,and veneers,etc

- 1) Work On flat surfaces(180*) Surface should be smooth,dry, clean and oil free.
- 20 2) Paste the dry flowers and other botanicals as directed in patterns or designs. On the surface Pasting should be very firm or else in resin it will tear off or get displaced to spoil the design in permanency.
- 3)Avoid making floral laminates in Rainy seasons, as results are not good.

4) Design the dry flowers by pasting them on surface with good finish.

5) With hair dryer, blow the surface of the laminate after flower pasting, in order to dry the surface, remove any unwanted particles, repaste the flowers and other elements in case any of them is not properly glued. (Repair)

5 6) Keep the floral laminates for one hour in direct sunlight, in order to remove last trace of moisture in flower, glue or of laminates itself.

7) Place the laminate floral with the stretched thick cellophane on top of it, about 4 inch oversized to the laminate to facilitate its procedure. Keep weight at four corners of the Cellophane so that the laminate is safe and dry up. Remove
10 the cellophane and proceed.

8) Mix 2g of hardener MEK (peroxide hardener) into the 200g pre-mixed resin (epoxy resin), mix thoroughly. blow away any bubbles that may have formed on the mixture. The bubbles should be removed or they will produce holes on the laminate. Resin is a clear polyester medium that mixes with hardeners
15 together as a liquid and dries hard and clear.

The resin used is preaccelerated polyester resin dissolved in styrene monomer. The polymerization is completed with the addition of hardener to the resin, either acetylacetone peroxide or methyl ethyl. The amount of hardener needed is 1% to Resin.

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For floral laminates only one percent is added to preserve the colour of the flowers as if more than one percent is added it generates heat during the lamination process while reacting with resin chemically, leading to fading of floral colours. (due to heat generation, isomerisation of colour pigment leads to

decolouration of flowers)It will take few 3-4 extra hours in drying but with better results.

9) Pour the resin mixture in the center of the floral panel. Cover with cellophane

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10)Use squeegee with hand pressure and fast to spread the resin evenly and make sure no bubbles are present. Spreading should be from the center going out. Any air bubbles need to be removed before the coat dries up. Even pressure should be used to spread the resin and to compress. Allow to cure in

10 15-30 minutes.

11)Put equal weight on the corners of the laminate to ensure that the cellophane does not lift during the resin curing process..Leave Overnight until the resin sets completely. Usually, resin will set dry and cellophane, will easily peel off, after the laminate dries up Trim the corner lines in case the resin has over
15 flown the laminates to give good finish.

12)Once the resin dries, you will have a clear view of the dry flower, and the flower will not be able to decay, as it has no access to oxygen.

13)Work in a well-ventilated area. Wear a protective mask to prevent the inhalation of excess fumes from the epoxy resin. Put on rubber gloves to protect
20 your skin from coming in contact with the resin. Open all the windows in the room and turn on a fan on to exhaust air from the room. If you have a breathing mask, put it on. Resin is toxic, so the less you breathe in, the better

Preservation of Dried Flowers as floral laminates With Clear Resin

The problem with saving dried flowers is that as the flower dries out, it becomes increasingly fragile and delicate, which makes handling or touching the flowers nearly impossible. This also means that displayed flowers become dusty over time, and they cannot be cleaned without destroying them. One solution is the floral laminates in polyresin. Flowers are one of life's greatest pleasures. Unfortunately, their lives are fleeting after they are cut. Through drying, it is possible to hold on to cut flowers for years. Dried flowers are quite long lasting, but like their fresh counterparts, they, too, are vulnerable to the passage of time. Their colors fade, and their leaves and petals crumble. By treating or embedding dried flowers(as laminates) in resin, however, it is possible to protect and preserve them even longer, and floral Laminates can be done on any surface of wood, veneer, fiber glass, acrylic, ceramics , bamboo, textiles or any natural surface.

Resin floral laminates: We Mix 2g of hardener MEK (peroxide hardener) into the 200g pre-mixed resin (epoxy resin), usually in common method about 2% or little more of hardener is added to the resin mix. But it leads to good amount of heat generation in the chemical processing of it, which leads to decay of color.

We reduce the amount of hardener by 1%, allowing it to take comparatively extra few couple of hours to harden the transparent resin, but facilitating very less heat generation in the process to avoid isomerisation of color pigments. secondly the oxidation process is arrested in permanency because the flowers are forever embedded under the dried a resin hence no more access to oxygen.

Thus by resin lamination we reduce both isomerisation and oxidation of color

pigments and hence better color retention of dried botanicals in resin laminated floral sheets.

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WHAT CLAIMED IS:

1. An improved process for an improved process for floral botanical collage decoupage which comprises:
 - 5 (i) cutting craft media (dry botanicals with stencils) and mounting the same on any surface of product with combination of other botanical elements like bamboo, grass, weeds, seeds, stem, tendrils, fiber, solawood in any desired manner including artistic manner; which comprises reducing the oxidation and isomerisation of carotenoid and anthocyanin and hence reducing colour loss while
 - 10 drying and storage of vegetation and also during crafting of the vegetation ;
 - (ii) making stencils of cheapest material such as cardboard and paper, cutting out motifs;
 - (iii) shaping the petals in any desired shaped, pasting the same with known adhesives; characterized in that
 - 15 botanicals are dried prior to floral collage decoupage by drying while using mixture of desiccant-silicagel + silversand + non iodised salts(1:1:1 ratio).
 - iv) and finally obtaining floral decoupage or only floral collage or a combination of both in design processing as application of the craft.
- 20 2. Process as claimed in claim 1, wherein drying is effected in silica gel mixture, in microwave for less than 24 hours and storing the same under vacuum.
3. Process as claimed in claim 1 or claim 2, wherein organic manure containing nitrogen, phosphorous and potassium is used as nutrient to give in
 - 25 built 20% low pH in uniform relative availability to the structured component of the plant for color stability and vegetation.

4. Process as claimed in claim 3, wherein said organic manure is used to reduce 20 % acidity of plant structure and thereby reducing the senescence process that is aging process to obtain best natural colour texture and hence dried vegetation grown in organic manure are better in texture and colour and more stable in longer duration of time almost 4 times more.

5. Process as claimed in any of claims 1 to 4 wherein above conditions reduce the oxidation and isomerisation of carotenoid and anthocyanin and hence reduced colour loss while drying and vacuum storage of vegetation and also during crafting of the vegetation.

6. Process as claimed in any of claims 1 to 5 wherein during storage exclusive of oxygen, light and humidity is facilitated to stop decomposition of product.

7. Process as claimed in any of claims 1 to 6 wherein Reducing the percentage of peroxide hardener to 1% in the process of floral resin lamination in order to reduce heat and isomerisation of colour pigments and oxidation by permanent embedment of flowers in the harden resins.