Comparative Study of Polyherbal Formulation for Antiarthritic Activity Having Cockle Shell, Egg Shell, Ginger and Balloon Vein in Gel Form and Oil Form: A Novel Preparation for Anti-Oxidant Activity

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ABSTRACT
Inflammatory and chronic disease of the joints and tissues surrounding them, rheumatoid arthritis is known as the most common form of arthritis. Traditional medicines plays major role because of more advantageous like lesser side effects, naturally available and cost effective. A formulation for anti arthritis activity was developed, isolated, and evaluated in this study. Based on the extensive review of the literature, we have formulated three formulation like gel, polyherbal oil formulation with extract of herbs and polyherbal powder with powders of herbs. We have selected, traditional herbs (Cockle shell, Egg shell, Ginger and Ballon Vein) based on the literature and does a comparative study between gel and the oil formulation to check which has better anti arthritis activity. The selected herbs for formulation of gel are cockle shell and egg shell which has rich calcium content and for oil formulation herbs like balloon vein and ginger were chosen. The chemical constituent present in herbs plays a major role in curing rheumatoid arthritis. Then finally we have done a evaluation like pH measurement, spreadability, specific gravity, antioxidant study etc., between the comparison of DPPH assay of the formulation, clearly reported that the efficacy in the medicated oil in the extract and well in the macerated oil showed significant anti-oxidant activity when compared to the gel.

Key words: Herb formulation, RA, In vitro studies – DPPH.

INTRODUCTION
Rheumatoid arthritis is an inflammatory disease that commonly affects the joints and peri-articular tissues. Rheumatoid arthritis is a chronic, progressive, autoimmune condition. Pathological techniques are caused by antigen antibody complexes. Joint inflammation is triggered by infection-causing mediators. Lysosomal enzymes are released by inflammatory cells, damaging bone and animal tissue, leading to disability. Those are as a result of extra variety of proinflammatory molecules loose from macrophages inclusive of reactive chemical element species and eicosanoids. Eicosanoids consisting of prostaglandins, leukotrienes those are secreted by way of immune cells and macrophages.1 Inhibiting Cox and Lox enzymes modulates arachidonic acid metabolism in persistent inflammatory conditions, so inhibiting Cox and Lox enzymes modulates arachidonic acid metabolism.2 RA is a collection of procedure, such as proliferation of synovial mobile, fibrosis, formation of pannus and cartilage and bone destruction. The prevailing takes a look at is to formulate different forms of anti -arthritic formulation like gel and oil with its assessment parameter assessment.

MATERIALS AND METHODS
A local beach in Chennai provided us with cockle shells.

Gel formulation
Isolation of cockle shell
After cleaning the shells with a brush and rinsing them with double-distilled water (DDWD), they were scrubbing under tap water to remove dirt. A mortar and pestle are used for fine crushing of the cockle shells, which are then blended in a blender machine into fine cockle shell powder. Micron size (10-63 m) was obtained by sieving the powder using an AS 200 Control Sieve Shaker made of stainless steel. The micron-sized cockle shell powder was dissolved in 20 mL of 5 M hydrochloric acid (HCl) and the following procedures were conducted to produce calcium chloride (CaCl2). Emsure® (Merck KGaA, Darmstadt, Germany), 37%. Filter sheets (Fiorioni Filter Circles 70 mm, Lab Logistic Group GmbH, Meckenheim, Germany) were used to filter the solution. To remove the contamination products from the solution, a CaCl2 and DDW combination was spun at 500 rpm at room temperature for one hour. Following the formation of the liquid, 1 L of DDW was added to make the stock solution.

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Preparation of ginger extract: Dried ginger was used to make ground ginger powder. A Soxhlet extractor was used to purify the methanolic extract. An extraction was performed by loading 30 grams of ginger powder into the cartridge, adding 300 mL of methanol, and running the extraction. Condenser and vacuum pump purification were used to purify the extract.

Preparation of polyherbal sesame oil: The prepared methanolic extract of balloon vein and ginger were directly added to the sesame oil.

Preparation of polyherbal oil using powder of herbs: It was collected, cleaned, dried and powdered under shade at room temperature and then added directly to sesame oil to test for its activity after that. Ballon vein and ginger were collected, cleaned, dried, and powdered.

Physical evaluation

The above formulation were preliminary evaluated for its pH measurement, Physical evaluation (Colour, Odour, Consistency…), Washability, Viscosity, Spreadability and specific gravity.

Evaluation of anti oxidant activity by using in-vitro dpdh assay:

In the bleaching of purple colored methanolic solutions of DPPH, hydrogen atoms or electrons were measured in the corresponding extracts and pure compounds. An analysis of DPPH radicals was conducted using methanolic extracts and essential oils. Each extract in methanol sample of 4 mL was added separately to a DPPH radical solution in methanol of 0.2 mM concentration (final concentration of DPPH). Shaking vigorously for 30 minutes and then allowing the solution to stand for 30 minutes was followed by measuring the absorbance at 517 nm with a spectrophotometer (Shimadzu UV-1240, Kyoto, Japan). As a percentage \[ I (\%) = 100 \times (A_{blank} - A_{sample}) / A_{blank} \] the inhibition of free radical DPPH was calculated as follows:

A sample represents the test compound’s absorbance and A blank represents the absorbance of the control (containing no test compound).

RESULT

Results shown in Table 2 and Figure 11.

Table 1: List of materials and their uses in formulation.

<table>
<thead>
<tr>
<th>NAME OF MATERIAL</th>
<th>CATEGORY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cockle Shell</td>
<td>Active Ingredient</td>
</tr>
<tr>
<td>Egg Shell</td>
<td>Active Ingredient</td>
</tr>
<tr>
<td>Ginger</td>
<td>Active Ingredient</td>
</tr>
<tr>
<td>Ballon Vein</td>
<td>Active Ingredient</td>
</tr>
<tr>
<td>Sesame Oil</td>
<td>Active Ingredient</td>
</tr>
<tr>
<td>Carbobpol</td>
<td>Polymer</td>
</tr>
<tr>
<td>Triethanolamine</td>
<td>P* Adjustor</td>
</tr>
<tr>
<td>Propylene Glycol</td>
<td>Humectant</td>
</tr>
<tr>
<td>Methyl Salicylate</td>
<td>Cooling Agent</td>
</tr>
<tr>
<td>Menthol Crystal</td>
<td>Volatile Oil</td>
</tr>
</tbody>
</table>

Figure 1: Isolated CaO powder
Table 2: List of materials and their uses in formulation.

<table>
<thead>
<tr>
<th>FORMULATION</th>
<th>PH</th>
<th>COLOUR</th>
<th>CONSISTENCY</th>
<th>GREASINESS</th>
<th>ODOUR</th>
<th>WASH ABILITY</th>
<th>SPREAD ABILITY</th>
<th>VISCOCITY</th>
<th>SPECIFIC GRAVITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEL</td>
<td>7.4</td>
<td>CREAMY WHITE</td>
<td>SOFT AND SMOOTH</td>
<td>GREASY</td>
<td>MENTHOL</td>
<td>WASHABLE</td>
<td>5</td>
<td>1.70 poise</td>
<td>0.9118</td>
</tr>
<tr>
<td>Poly herbal oil with extract</td>
<td>6.6</td>
<td>YELLOW</td>
<td>SOFT AND HOMOGENOUS</td>
<td>GREASY</td>
<td>CHARACTERISTIC WASHABLE</td>
<td>5</td>
<td>0.9123</td>
<td>0.9731</td>
<td></td>
</tr>
<tr>
<td>Poly herbal oil with herbal powder</td>
<td>6.4</td>
<td>GRENISH BROWN</td>
<td>SOFT AND HOMOGENOUS</td>
<td>GREASY</td>
<td>CHARACTERISTIC WASHABLE</td>
<td>5</td>
<td>0.91</td>
<td>0.97</td>
<td></td>
</tr>
</tbody>
</table>

Figure 2: Magnetic stirrer with CaCO3

Figure 3: Isolation of cockle shell

Figure 4: Electric stirrer

Figure 5: Gel formulation

Figure 6: Methanol extraction of balloon vein
DISCUSSION

Based on the extensive review of the literature, we have formulated three formulation like gel, polyherbal oil formulation with extract of herbs and polyherbal formulation with powders of herbs. We have selected this herbs based on the literature and does a comparative study between gel and the oil formulation to check which has better anti-arthritis activity. In the medicated oil shown the pH with the range of 6.4 to 6.6, as per literature review the pH will be suitable for the high penetration of formulation to the skin epidermal layer. The viscosity of the medicated oil is in the range of 0.9 which is useful of the stability maintenance during the winter season also. The formulation of gel are cockle shell and egg shell which has rich calcium content supported with pH 7.4 and viscosity 1.7. The comparison of DPPH assay of the two formulation, clearly reported that the efficacy in the medicated oil in the extract and well in the macerated oil showed significant anti-oxidant activity when compared to the gel. From this we have concluded that poly herbal oil has better anti oxidant activity then gel further study requires to be carried out for its arthritis activity.

REFERENCES

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