Dear Doctor, SYSTEMIC MANAGEMENT NOW ALONG WITH New TOPICAL INNOVATION to Fight ACNE & PIMPLES Fast

Dual intensive acne treatment

PURODIL® Introducing Anti-acne Gel

Enriched with A NOVEL BREAKTHROUGH MOLECULE for Acne Treatment

α-mangostin
PURODIL®

ENRICHED WITH A NOVEL PHYTOCONSTITUENT

A POTENTIAL ANTI-BACTERIAL

α-Mangostin from Garcinia

REDUCES INFLAMMATION CAUSED BY P. acnes

α-Mangostin has a remarkable anti-inflammatory effect by inhibiting TNF-α production generated from peripheral blood mononuclear cells (BMC) stimulated with R. acnes. (Filopoeia, 78; 401-408, 2007)

REDUCES ROS-INDUCED FREE RADICAL DAMAGE

DPPH radical scavenging activity acts as free radical scavenger. (Phytothe Res. 23, 1047-1065, 2009)

DECREASES SEBUM PRODUCTION

Down regulates the formation of 5α-reductase, decreases DHT level, eventually reducing excessive sebum secretion. (Fragr. J. 32(3),53-57, 2004)

The fruit rinds of G. mangostana have been claimed for effective concentrated source of xanthones. G. mangostana and its xanthone acnes and S. epidermidis which were the critical etiologic agents in activity. The xanthone compounds have antibacterial activity against The antimicrobial and anti-inflammatory activities of G. mangostana therapy of skin infections like acne & pimplles. The pericarp of this plant is a compounds, α-mangostin, exerts strong antimicrobial activity against P. acne. It also exerts potential anti-inflammatory & free radical scavenging S. aureus, both penicillin-resistant and methicillin-resistant strains. are particularly noteworthy considering to solve antibiotic-resistant problem in acne treatment. (J. Sci. Tech. 31(1), 41-47, 2009)
Bakuchiol Potentially inhibits P. acnes

Bakuchiol—Potentially inhibits P. acnes

Psoralea corylifolia (Bakuchiol) contains a monoterpenone, Bakuchiol which has been reported to exhibit strong antibacterial effects. Bakuchiol exhibits excellent P. acnes inhibitory activity. The IC₅₀ value of Bakuchiol against P. acnes was established to be 0.6 μg/mL.

The mechanism involves the up-regulation of TIG (Tazarotene-inducible gene) by bakuchiol, may provide a solution to the skin ailments (Acne vulgaris, rosacea) interestingly it is reported that Tazarotene inducible gene (TIG1) is significantly up-regulated by Bakuchiol and the expression of TIG1 is found to be down-regulated in variety of human cancers as well as acne, rosacea and psoriasis. Thus, it is quite conceivable to assume that the up-regulation of TIG1 gene by Bakuchiol may provide a solution to skin problems.

Berberine disrupts bacterial cell of P. acnes

Berberis aristata (Daruhaldi) extract showed outstanding antimicrobial activity against Propionibacterium acnes based on the disc diffusion assay with MIC & MBC value of 656 μg/mL and 1250 mg/mL respectively in comparison to standard, Clindamycin with MIC and MBC value of 56 μg/mL and 66 mg/mL resp. The antimicrobial activity of Berberis aristata is attributed to the presence of berberine which intercalates with DNA, thereby disrupting bacterial cell.

Clove extract showed testosterone 5α-reductase inhibition and showed androgen receptor binding inhibition resulting in decreased sebum production. (Prop 1, 33, no. 3, 63-67, 2004)
Diminish stress induced changes in the body

Reduce burden of oxidative stress
Inhibits free radicals which may be found due to stress, pollutants, fried food etc. thereby protects the epidermal cells, checks acne flare-ups.

PURODIL BREAKS Potential Pathways of GUT-BRAIN-SKIN AXIS in Acne vulgaris

1. Anti-stress
2. JUNK FOOD
3. Gut
4. Microvilli
5. Detoxification
6. ACNE

Stimulates Liver functions, causes effective detoxification
Modulates bio-transformation reactions in detoxification process, protects from cytotoxic, genotoxic and metabolic toxins.

Reduces endotoxin production
Purodil systemic therapy protects from damage caused by inflammatory mediators, helps to remove toxins (waste metabolites) from the body system and boost body defense system, ensuring faster relief.

Potential Pathways of the Gut-Brain-Skin Axis in Acne Vulgaris: [1] Psychological distress alone or in combination with [2] high fat diet, processed comfort foods devoid of fiber, cause alterations to [3] gut motility and microbiota profile [4]. Loss of normal microbial biofilm (Bifidobacterium in particular) causes intestinal permeability and endotoxins gain systemic access [5]. Burden of inflammation and oxidative stress is increased, substance P* is elevated, insulin sensitivity is decreased due to endotoxemia [6]. In those genetically susceptible to acne vulgaris, this cascade increases the likelihood of excess sebum production, exacerbations in acne and additional psychological distress. Both GIT toner and antimicrobials may play a role in cutting off this cycle at the gut level.

*P - primary mediators of stress induced amplification of inflammation and sebum production in Acn

### Primary Skin Irritation (PII) Study

**A. Skin responses on Skin Irritation Studies**

<table>
<thead>
<tr>
<th>Time</th>
<th>Group 1</th>
<th>Group 2</th>
<th>Group 3</th>
<th>Group 4</th>
<th>Group 5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Control</td>
<td>Purodil gel</td>
<td>Alc. Extracts of Purodil</td>
<td>Alc. Extracts of Purodil</td>
<td>Formalin (Std. irritant)</td>
</tr>
<tr>
<td>Erythema &amp; Scar formation</td>
<td>1 hr</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>24 hr</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>168 hr</td>
<td>0</td>
<td>3</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Edema formation</td>
<td>1 hr</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>24 hr</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>168 hr</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

**Score (on 0-4 scale)**

- **B. Av. Primary Skin Irritation Index (PII)**
  - (On 0-8 Scale)
  - 0 0 1 0.16 5.30

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### Clinical Study

A clinical study was conducted to evaluate the efficacy of PURODIL GEL in patients with mild to moderate acne vulgaris. 40 patients with mild to moderate acne vulgaris were selected and inspected for the disease.

The results indicated that the inflammatory acne index and total counts were significantly reduced after 3 weeks of treatment with Purodil Gel. It was observed that the rate of healing of papular and pustular lesions in test and control groups were significantly different ($p < 0.001$, and $p < 0.05$, respectively) the inflammation index in the treatment group was significantly reduced ($p < 0.001$). The results of administration of herbal and placebo cream are tabulated in table below.

The results indicated that treatment with the Purodil Gel resulted in clinical efficacy in comparison with negative control. Almost 7 fold reduction in papula number was found, after 3 weeks of treatment with the Purodil Gel as compared to control groups.

Also comparing the number of puscles and nodules after 3 weeks, the reduction of inflammation and severity indices in test group were highly significant ($p < 0.001$).

**Comparison of Acne vulgaris indices in treatment and control groups, before & after treatment (Mean ± SE, n=40)**

<table>
<thead>
<tr>
<th>Index</th>
<th>The number of papules</th>
<th>The number of puscles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before</td>
<td>After</td>
<td>Before</td>
</tr>
<tr>
<td>Control</td>
<td>21.93 ± 0.36</td>
<td>14.20 ± 0.05</td>
</tr>
<tr>
<td>Test</td>
<td>21.93 ± 0.05</td>
<td>14.20 ± 0.05</td>
</tr>
</tbody>
</table>

P-value: 0.49 < 0.001

The analysis of the results with Purodil GEL revealed significant improvement in the patients & following observations were reported:

- Promising anti-acne & anti-inflammatory effects.
- Improvement in the skin tonicity while on the treatment.
- Devoid of any adverse effect.

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The above study was conducted at Aggarwal Hospital, New Delhi under the supervision of Dr. B.P. Gupta MBBS, Department of Ayurveda, Aggarwal Hospital, New Delhi.
In experimental study, acne was induced by testosterone inj. and then treated with 3 different preparations. (Standard allopathic gel, Standard herbal gel, Purodil gel)

Interscapular region was shaved of albino rats

Testosterone inj. (I.M.) administration for 14 days

Enlargement of Sebaceous Glands, confirmed by histopathology

Treatment with different formulation for next 7 Days

Experimental subjects sacrificed and skin excised from interscapular region

Evaluation by Histopathological examination

Study showed:

- Treated groups showed a significant reduction in number and size of sebaceous glands as compared to the toxic group.

- Amongst the treated groups the Allopathic Standard animals showed decrease in number of sebaceous glands but not in size of the unit while the Purodil (Ethosomal) gel formulation and Herbal standard subjects showed a decrease in both number and size of sebaceous glands.

- The results indicate a protective effect of the drugs used against the effect of testosterone administration on the sebaceous glands in the dermis.

- From the above observations it is concluded that the α-mangostin loaded PURODIL (ethosomal) gel formulation had a protective effect on both the number and size of sebaceous glands.

(Sharma S. Optimisation of extraction technology of α-mangostin from Garcinia mangostana and development of its ethosomal anti-acne formulation M. Pharm Thesis by Dept. of Pharmacog. & Phytochem., Jamia Hamdard, 2012)
PURODIL®

ACTS AS ANTI-INFLAMMATORY

CHECKS ACNE AGGRAVATION
Curcumin from *Curcuma longa* (Hariidra) inhibited calcium / calcium ionophore-stimulated formation of LTB4 (leukotriene B4) from endogenous arachidonic acid with EC₅₀ of 27x10⁻¹⁰m. Since leukotrienes are considered to be involved in the initiation & maintenance of a variety of inflammatory diseases, the inhibition of leukotriene synthesis may at least in part be responsible for anti-inflammatory action of curcumin. (Planta Medica, 58, 226, 1992)

INHIBITS PROSTAGLANDIN FORMATION
*Glycyrrhiza glabra* (Mulethi) exhibits anti-inflammatory activity due to inhibition of Phospholipase A2 activity, an enzyme critical for anti-inflammatory responses. In Vitro research demonstrated that Glycyrrhizinic acid inhibits cyclooxygenase activity, prostaglandin formation (PGE2) as well as inhibiting platelet aggregation stimulating the inflammatory process. (Alternative Medicine Rev., Vol.10, No. 3, 2005)

EXERTS ANTI-HISTAMINIC ACTION
Bioflavonoids like Quercitin, Rutin etc. from *Azadirachta indica* (Neem) and *Hemidesmus Indicus* (Satva) are known to inhibit histamine release, protecting against various skin affections. Flavonoids inhibit enzymes which increase histamine release from mast cells and basophils & act by blocking intracellular reservoir of histamine. (Planta Medica,61, 235-256, 1997; The Treatise on Indian Med. Plan, NISG, CSR, New Delhi, 1995).

CHECKS SKIN ALLERGIES, STABILIZES MAST CELLS
Isoliquiritigenin, from *Glycyrrhiza glabra* (Yashimadhu) possesses cell membrane stabilizing effect. Isoliquiritigenin inhibited histamine release from peritoneal exudates induced by immunological and non-immunological reaction. In addition, it protects red blood cell membrane against various agents. (Chem Pharm Bull., 40(6), 1439-1442, 1992)

TRIGLYCERIDES
[Path diagram: triglycerides]

LIPASE
[Path diagram: lipase]

FREE FATTY ACIDS
[Path diagram: fatty acids]

GLYCEROL
[Path diagram: glycerol]

IRRITATION
INFLAMMATION
HYPERKERATINIZATION
[Path diagram: inflammation]

ACNE GETTING WORSE
[Path diagram: acne]

Acne inflammation and aggravation

A Unique SYSTEMIC Approach + New TOPICAL Innovation

EXERTS DETOXIFYING ACTION

MODULATES DETOXIFICATION PROCESS
*Svertia chirata* (Chirayata) modulates biotransformation reactions in detoxification process, protects from cytotoxic, genotoxic and metabolic actions of environmental toxicants, activates glutathione-S-transferase (GST), glutathione peroxidase (GPX), superoxide dismutase (SOD) and catalase (CAT), & reduction in lipid peroxidation. (Teratol. Carcinogen. Mutagen, 23 (Suppl.1), 313-322, 2003)

STIMULATES LIVER FUNCTIONS CAUSES EFFECTIVE DETOXIFICATION
Supplementation of *Andrographis paniculata* (Kalmegh) during severe liver damage condition results in elevation of the glutathione levels, which exerts protective effect on the hepatocytes by detoxification of xenobiotics. (Ind. J. Pharmacol., 32, 288-293, 2000)

IMPROVES ELIMINATION OF TOXINS
According to the Townsend Letter for Doctors (December 1994), antioxidant, antiviral & antibody-stimulating properties of *Glycyrrhiza glabra* (Yashimadhu) Roots make it a liver protectant and detoxifier. Licorice Root is regarded as an important herb for treating kidney ailments and is also recommended for the liver and respiratory tract. (Planta Medica 50; 1984)
**Indications:** Acne vulgaris, Acne rosacea, Pimples, Skin blemishes, Acne spots, Boils, Urticaria, Skin Allergies or as directed by the Physician.

**Usage - Gel:**
After cleansing, use daily every morning and at night. Apply a small amount of gel with your ring finger gently tap around acne and blemishes area. (for best results leave overnight).

**Dosage - Syrup:**
- **Adults:** 2-3 tsf. BD
- **Children:** 1-2 tsf BD

**Dosage - Tablets:**
- **Adults:** 2 tabs. BD or as directed by the Physician.

**Exclusive Benefits of Dual-therapy**
- *Enriched withα-mangostin,* a novel Phyto compound in Acne Treatment
- **Effective against both P. acnes & S. epidermidis**
- **Repairs & heals acne damaged skin**
- **Prevents relapse of acne, pimples & urticaria**
- **Modulates Detoxification process**
- **Breaks viscous cycle of Stress-acne-stress**

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