



**Does your Pain Balm
really relieve your pain?**

In this issue we bring you a Comparative Test report on some of the Pain Balms commonly used by consumers. Before we proceed to tell you about the various parameters we used for this Test Report and how we arrived at the final scoring, it would be interesting to give you a little background information regarding kinds of pain, its causes and management of acute pain. We also bring you the list of important ingredients used in most pain balms and the characteristic attributes of each of the brands tested. Another interesting feature of this report is that we did a User's Perception survey. This survey revealed why consumers chose a particular brand and their reasons for choosing a particular brand.

Historical theories

Before the relatively recent discovery of neurons and their role in pain, various different body functions were supposed to account for pain. There were several competing early theories of pain among the ancient Greeks: Aristotle believed that pain was due to evil spirits entering the body through injury, and Hippocrates believed that it was due to an imbalance in vital fluids. In the 11th century, Avicenna theorized that there were a number of feeling senses including touch, pain and titillation, but prior to the scientific Renaissance in Europe pain was not well-understood, and it was thought that pain originated outside the body, perhaps as a punishment from God.

What is Pain?

Pain is an unpleasant feeling often caused by intense or damaging stimuli,

such as stubbing a toe, burning a finger, putting alcohol on a cut, and bumping the "funny bone." The International Association for the Study of Pain's widely used definition states, "Pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage". Pain motivates the individual to withdraw from damaging situations, to protect a damaged body part while it heals, and to avoid similar experiences in the future. Most pain resolves promptly once the painful stimulus is removed and the body has healed, but sometimes pain persists despite removal of the stimulus and apparent healing of the body; and sometimes pain arises in the absence of any detectable stimulus, damage or disease.

Types of Pain:

Pain is usually transitory, lasting only until the noxious stimulus is removed or the underlying damage or pathology has healed, but some painful conditions, such as rheumatoid arthritis, peripheral neuropathy, cancer and idiopathic pain, may persist for years. Psychogenic pain, is pain caused, increased, or prolonged by mental, emotional, or behavioral factors. Headache, back pain, and stomach pain are sometimes diagnosed as psychogenic. Sufferers are often stigmatized, because both medical professionals and the general public tend to think that pain from a psychological source is not "real".

Pain is part of the body's defense system, producing a reflexive retraction from the painful stimulus, and tendencies to

protect the affected body part while it heals, and avoid that harmful situation in the future.

Acute pain is usually managed with medications such as analgesics and anesthetics. Management of chronic pain, however, is much more difficult and may require the coordinated efforts of a pain management team.

Myths about pain and cure for pain:

A cure for pain doesn't exist. To "cure" pain, the condition causing your pain must be anatomically removed from your body through surgery and in most cases this simply is not feasible nor possible, nor reliable as a "Cure for Pain". Pain results as a result of agitated inflamed nerves at the point of injury or disease. Any Pain Relief product that "works" will more often than not be unique to each of us as individuals. In order to achieve pain relief and pain control, your task is to find the right product, methodology, or pain relief treatment that allows a dramatic reduction of your painful condition.

Pain relief products are NOT a One Size fits all solution:



All of us have different anatomical make-up's and reactions to various medications. It's basically a "try it and see if it works" when it comes to finding pain relievers that work whether each of us likes it or not. There is simply no way of getting around experimentation with various pain relief products and alternative pain relief solutions until you find the specific pain reliever product or combination of pain relief products that works for you.

Pain balm is something that is comforting and soothing. It is one which relieves the pain. Thus the word relief is inbuilt in the word Pain Balm. A Balm in the physical sense is defined as a semisolid preparation (usually containing a medicine) applied externally as a remedy or for soothing an irritation. It is also defined as any of various aromatic resinous substances contained in a preparation used for healing and soothing. When pain relief balms are rubbed, on the area where the pain exists, the pressure and movement produces excess of sensory input that blocks the pain sensation.

How does the Pain Relief Balm work?

Pain Relief Balms work on the principle of counter irritant, i.e., instead of actually relieving the pain they work on the principle of suppressing the pain by causing irritation on the point where the pain relief balm is applied. Pain balms generally contain 3 components namely (1) Methyl salicylate, (2) Menthol, and (3) Camphor. All these are easily absorbed through the skin.

- Methyl salicylate absorbed through the skin acts as an analgesic.
- Camphor is highly volatile and readily absorbed through the skin. It acts as a rubefacient, (a substance which when rubbed causes redness due to dilation of blood vessels) produces a cool sensation and also acts as a mild local anesthetic. When applied externally, camphor numbs the nerve endings. Menthol is a white crystalline substance and a principal constituent of oil of peppermint and it dilates the blood vessels. Because of the increased blood flow one gets a cool sensation in the balm-applied area.

A combination of these three active ingredients is useful in case of headache and rheumatic pains. The other ingredients in the pain relief balm are Eucalyptus oil, Thymol, Turpentine and Clove oil.

Although these Pain Relief Balms have a special pharmacological effect in relieving pain, it is actually the amount of pressure applied and the movement that plays a significant role. Role of the balm includes a local anesthetic effect and finally provides a comfortable stage. These products do not have any side effect or allergic reactions such as irritation or darkening of the skin or cause inflammation on the point of application. Hence, the consumer develops a liking for the chosen product.

For instance, If you were to ask the class a question, “Who is your favorite teacher?” the responses will be many. There is a psychological element attached to the teacher whom you



consider the best! Similarly, pain balms which are handy in relieving the dull, less intense pain; have users vouching for the brand they use. Indeed the smell of the pain balm often announces the presence or arrival of some persons. A thorough comparative study of all the leading brands of pain relief balms were carried out to verify the contents and the specific claims on the labels

COMPARATIVE TESTING

Comparative Testing is a formal process by which different brands of a product category are tested for Quality, for conformance to the minimum standards laid down by Bureau of Indian Standards. Such a test also reveals, if a particular tested brand exceeds such minimum standards, whether there can be potential health and safety hazards and verification of special claims by manufacturers, if any. The results for all the tested brands are published in a Comparative Test Report which would provide consumers information to make an informed choice. CONCERT has undertaken this project of Comparative Testing for Southern Region under a

grant from Department of Consumer Affairs, Government of India. In the first year one of the products selected for testing is the pain relief balm.

Selection of Brands for Comparative Testing

The following brands were chosen for Comparative Testing based on enquiries with retail outlets on their popularity, and availability:

1. Amrutanjan Yellow Balm
2. Amrutanjan Strong Balm
3. Amrutanjan Maha Strong Balm
4. Tiger Balm
5. Zandu Balm
6. Iodex
7. Emami Mentho Plus
8. Khaja Balm
9. Himani Fast Relief

NB: The Tiger Balm tested and that available in the pharmacies, is different in composition from the Chinese Tiger Balm, although the logo and the container look similar.

The selected brands were purchased from reputed drug stores/medical shops, just as a consumer would do with proper receipts.

Criteria for testing

1. LABEL

A complete label of the pain relief balm should contain the following:

- Listing of the ingredients – As per the Drugs and Cosmetics Act. all the ingredients in concentration of more than 1% is to be indicated in descending order. The substance with highest concentration will appear first in the label and the one with least concentration will appear last.
- Name and Address of the Manufacturer

- Manufacturer's Licence Number
- Net Weight/Volume
- Batch Number
- Date of Manufacturing
- Date of Expiry
- Instructions for use
- Name and address of the importer, if manufactured outside India
- Warnings, if any In addition to verifying the statutory label requirement, the claims by the manufacturer were also verified.

All the brands tested carried the statutory warning "FOR EXTERNAL USE ONLY."

2. Health & Safety

The following parameters were tested

- Presence of any harmful ingredients that can cause inflammation or pigmentation of skin
- Test for Heavy Metals like Lead, Arsenic, and other Heavy Metals

All the Pain relief Balms tested were free from Lead, Arsenic and trace metals like Copper, Cadmium, etc.

3. QUALITY

Consistency

This should conform to the specifications given in the Indian Pharmacopoeia (IP). The preferred range of consistency of any Pain relief Balm is 150 – 200 for satisfactory results. This specification will ensure the balm spreads evenly on the skin for effective pain relief.

Melting Point

At normal temperature when we apply the balm on human body, it should melt and spread evenly without remaining on the skin as a solid mass.

Product Neutrality

The PH of a neutral substance is 7. If the PH is less than 7, it is acidic and if it is more than 7 it becomes alkaline. If the balm is acidic or alkaline, it causes irritation to the skin and is not desirable.

Thermal Stability

The thermal stability of any Pain Relief Balm is a measure of its ability to be stable at extreme atmospheric temperatures – in other words it should not melt and become liquid at high temperatures (summer) nor should it harden at lower temperatures (winter), but should remain stable.

Total Volatile Matter

All balms contain many aromatic and pain relieving natural products, which are volatile(vaporise quickly) in nature. The total volatile matter present in each balm was considered. A lower value indicates presence of lesser amount of the active ingredients in any Pain relief Balm. Higher value indicates a higher concentration of the active ingredient thus more effective in relieving the pain.

4.PRICE

MRP- Maximum retail price of the various brands were compared and by computing the price per unit gm or ml.

5.USER PERCEPTION

A Panel of twenty users were asked to physically apply the Pain Balm and give their views on its effectiveness.

The effectiveness of the Pain Relief Balm was gauged by the intensity of

the tingling or the burning sensation it produced, as the participants did not have any ache or pain at the time they undertook the test.

Higher percentage of the volatile material is considered to be more effective in relieving the pain. A few participants found it difficult to tolerate the higher concentration of the active ingredients as it irritated their eyes. Therefore, if you are sensitive it is better to go in for a pain relief balm with a lesser concentration of volatile material.

The spreadability results based on the user perception are very different from that obtained in the lab , which is grouped under quality criteria. The reason for this was the fact that the user in addition to rating the ability of the Balm to spread , also took into consideration the greasy feel on the skin upon application of the Balm - the painted feeling which made the user uncomfortable by clogging the sweat pores. The stainability of the Balm was tested as follows:

We present the results against these major criteria, which in our opinion is fair, and without any subjective element. The user is encouraged to study these results and make his/ her buying decisions based on their requirements and judgment.



Table Showing the comparison of quality & user perception in detail

Quality	Amrutanjani Aromatic- yellowbalm	Amrutanjani faster relaxation balm	Amrutanjani :maha strong balm	Tiger Balm	Zandu Balm	Index Double Power	Emami menthol plus balm	Kaja Balm Brown	Himani fast relief
Melting Point	Good	Good	Fair	Good	Good	Fair	Good	Good	Good
pH aqueous solution	Fair	Fair	Good	Good	Good	Fair	Good	Good	Fair
Spread ability	Good	Good	Fair	Good	Good	Fair	Fair	Good	Fair
Consistency	Good	Good	Fair	Good	Good	Good	Good	Good	Fair
Total Volatile matter at 550°C	Good	Fair	Fair	Very Good	Poor	Fair	Fair	Good	Fair
User Perception									
Effectiveness	Good	Fair	Fair	Fair	Good	Fair	Very Good	Excellent	Excellent
Irritants	Very good	Excellent	Excellent	Very good	Good	Good	Poor	Poor	Poor
Stain ability	Poor	Good	Good	Poor	Good	Fair	Very Good	Poor	Very Good
Spread ability	Poor	Poor	Poor	Poor	Good	Poor	Good	Very Good	Good

Table showing the overall rating of the pain balms

Brand Name	Packaging/ labelling	Health & safety	Quality	User Perception	Total Score by equal weightages	Total Score by diff. weightages	gm/ml	Cost Rs.	Cost per 10ml
Tiger Balm	Good	Good	Very Good	Fair	81.59	79.27	18 gm	38	21.1
Kaja Brown Balm	Good	Good	Very Good	Good	84.2	82.86	10 gm	19	19
Amrutanjani Aromatic- yellowbalm	Good	Good	Good	Fair	80.57	78.95	60 ml	80	13.35
Emami Mentho plus balm	Good	Good	Good	Very Good	83.18	82.55	50 gm	70	14
Zandu Balm	Good	Good	Good	Very Good	83.18	82.55	9 ml	24	26.7
Amrutanjani faster relaxation balm	Good	Good	Good	Good	81.93	81.05	60 ml	70	11.7
Himani fast relief	Good	Good	Fair	Very good	82.16	82.23	60 ml	75	12.5
Amrutanjani maha strong balm	Good	Good	Fair	Good	79.66	79.23	10 ml	25	25
lodex double power	Good	Good	Fair	Fair	75.91	74.73	50 gm	70	14

* The scores were computed by giving equal weightage for all 4 Criteria. Packaging and labelling -25%; Health and Safety - 25%; Quality - 25%; User Perception - 25%

** The scores were arrived at by giving greater weightage to a more important parameter. Packaging and labelling - 20%; Health and Safety - 30%; Quality -20%(conformance to statutory requirement); User Preception 30%

Scoring Method

CONSISTENCY: The preferred range of consistency of any Pain relief Balm is 150 – 200 for satisfactory results.

Pain Relief Balms with a consistency of 170 – 188, are rated as GOOD, those in the range of 188.1 – 192 as FAIR.

MELTING POINT: The melting point ideally should be 39° C – 40° C; the Pain Relief Balms in this range are rated as GOOD and those in the range of 42° C – 45° C as FAIR.

NEUTRALITY OF THE BALM: The preferred range is neutral, the balms with a pH value less than 5 (acidic) or greater than 7.5 as POOR, those in the range of 5 – 5.49 as FAIR, and in the range of 5.5 – 7.5 as GOOD.

SPREAD ABILITY: (as per IS: 6356: 1993) This is an indication of the capacity for absorption. Lower values

indicate better absorption. The balms with a value of less than 7.9 are rated as GOOD and those with a value between 8 – 8.5 as FAIR

TOTAL VOLATILE MATTER: The balms with a total volatile matter of more 50% are rated as VERY GOOD, those with a value between 40% – 50% as GOOD, 30% – 40% as FAIR, and below 30% as POOR.

Scoring of User perception

Each criterion and parameter is rated individually on a 5 point scale.

The rating given is 1 (Poor), 2 (Fair), 3 (Good), 4 (Very Good), and 5 (Excellent). Any parameter, which in our tests meets the defined standards, will be given the scoring of Good.

When it exceeds the minimum standards substantially, it will be rated Very Good.

When it exceeds the standards significantly and shows appreciable innovation, it will be rated Excellent.

COMPARATIVE TEST TEAM

Trustee in charge of Project

Mr.S. Ramani

Program Manager

Mr. M. Mohan

Concert Lead

Mr. M. Bhaskaran - Former Director, Drugs Control

Report compiled by Consultant Editor

Ms. S. Sripriya

Edited By

Ms. Nirmala Desikan

Special Supplement designed by

Mr. S. Baskar Rao/Mr. Bhushan