



## ANTISEPTIC AND HEALING EFFECTS OF TURMERIC OINTMENT ON LOCAL APPLICATION IN SUPERFICIAL BURN

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**Abstract:** An ethanol extract of turmeric in Vaseline base after proper sterilization was applied topically along with Vaseline gauze (Jelonet) in 228 patients of superficial burns over small area and compared against the control group with applications of Vaseline gauze (Jalonet) alone on another area/patch of the same patients. On 3<sup>rd</sup> day itself the superficial burn wound were found chemically clean and healthy without any apparent infection in significantly greater number of cases (52%) in test group than control group (16%). A clean, healthy and dry area was also noted with passage of time in turmeric ointment group (test group) which was less pronounced in control group. On 11<sup>th</sup> day finally only few cases (about 15%) showed signs of wound infection in test group against about 80% in control group. Bacteriological exam with swab culture also supported and correlated well with clinical findings. Healing was also found to be rapid with good epitelisation in turmeric group.

**Keywords:** Turmeric, Curamin, Superficial Burn

### INTRODUCTION

Scientists in developing countries are entering an era in which plants can be expected to occupy a prominent position in list of national priorities and according to an estimate of WHO (Bulletin of WHO, 1985) perhaps 80% of more than 4000million inhabitants of the world even today rely on traditional medicine for their primary care using plant extracts or their active principles. Traditional Medicine, even the most ardent critics will admit, though offers a mass of remedies varying from worthless to highly effective ones; it is the task of science to find the germs and to discard the dross.

Haldi (turmeric), a widely used traditional medicinal plant has been recently a subject of scientific and systematic study in different laboratory and Institute of India and abroad since early 1970's but mainly concentrated on anti inflammatory and choleric effects of turmeric or curamin (the active principle of turmeric). Charak (1000BC)<sup>(1)</sup> in Charak-Sanhita and Dhanvantari (12<sup>th</sup> century AD) our ancient physicians, advocated topical use of Turmeric (Haldi), a condiment in Indian surgery, in wounds and ulcers in Ayurvedic including burns. In vitro, growth of several bacteria (Streptococci, Staphylococci, *B. Subtilis* and several strains of clostridia) and fungi (*Sacchromyces Cerevisiae*, *Cryptococcus neoformans*, *Candida steelatoidea*, *Microsporum gypseum* etc) was inhibited with curcumin extract<sup>(2)</sup>. Mehra et al.,<sup>(3)</sup> found encouraging results with *Curamin longa* (linn) drops in

corneal wound healing. R. Kuttan et al.,<sup>(4)</sup> reported topical application of turmeric and curamin to be highly effective in advanced cancerous lesions providing relief in local symptoms reducing smell, itching and exudates with reduction in lesion size and pain. Extracts of *Curcuma longa* exhibited anti-inflammatory, antioxidant and antimicrobial properties<sup>(5)</sup>.

However, the research efforts in systematic and local effects of turmeric and its constituents and their possible clinical application have been done in limited way and needs more extensive studies. The search for an ideal/near ideal topical antimicrobial agent for burn cases is still not over as all the topical agents presently available have their limitations. Turmeric/Curcumin has been used in commercial preparation cosmetic cream as well as household remedies for long without any significant side effects being noted. Curcumin is chemically 1, 7-Bis (4-hydroxy-3-methoxyphenyl)-1, 6-heptadiene-3, 5-Dione and has also been isolated and synthesized in laboratory. Accordingly the present study was undertaken with limited aim to evaluate the possible beneficial effects of turmeric as ointment for topical application in burn taking into account the rate and quality of healing and antimicrobial effects, if any.

### MATERIAL AND METHODS

228 patients of superficial burns (less than 10%) from different places including Darbhanga Medical College Hospital, Patna Medical College and Hospital (Plastic Surgery Dept.) and Nalanda Medical College



and Hospital as well as private clinic and Nursing home at Patna from 2000 to 2003 were randomly taken for the present study. All the patients constituted both the test group and control group as turmeric ointment along with Vaseline gauze (Jalonet) was applied over small area in test group and Vaseline gauze (Jalonet) alone was applied locally over another patch/area of superficial burn of same patients. Determination of superficial burn was done clinically by appearance, presence of blister, pain, sensation to pinprick as well as hair epilation test because of its simplicity and convenience and it sub served all practical purposes.

#### Preparation and Application of Drug:

Finally powdered *Curcumin longa* rhizome (turmeric rhizome) was defatted with hexane at room temperature and then defatted material was extracted with 95% ethanol four times at room temperature. The alcoholic extract was concentrated in vaccum and the residue was triturated with ethyl alcohol acidified with acetic acid to 5-6, filtered and the orange yellow residue was washed once or twice with ethyl alcohol 80%. The crude curcumin yield was in the range of 2-3% approx. A paste was made with this semi purified turmeric extract in white Vaseline base and this ointment was properly sterilized. Then it was applied over desired sites, with all aseptic and antiseptic care taken, twice daily and covered with Vaseline gauze (Jalonet), dry gauge and cotton dressing followed by cotton bandage.

The wounds were minutely observed on each dressing day by naked eye as well as with help of magnifying glass and by palpation of edge, base and surroundings to note the rate and quality of healing, relief of pain, presence/absence of clinical evidence of inflammation and infection and degree of infection, if present. Presence/Absence of systemic signs of infection (eg. fever, tachycardia, tachyphonia, lethargy, anorexia, leucocytosis) were also noted. General appearance of wound (clean/unclean, healthy/unhealthy, moist/dry), presence/absence of discharge, color of discharge (creamy, yellowish, greenish), smell (offensive-fishy, faecal/unoffensive-sweetish etc), amount of discharge (scanty/fair/copious), presence/absence of necrotic tissue/slough/eschar, presence/absence of signs of infection, induration at the edge, surrounding skin and base were noted and rate of healing was observed by measuring epithelialization from margin and bed (good/fair/poor), size of wound and duration of wound, presence/absence of enlargement of regional lymph nodes and side effects/adverse effects, if any, were also looked for. A surface swab specimen was collected in proper aseptic manner and sent for bacteriological culture and sensitivity test on each day of dressing.

## RESULTS

As summarized in table no.1, longer number of cases from the 3<sup>rd</sup> day itself showed clean and healthy wound without apparent infection in test group (52.2%) than in control group (16.7%) and it went on increasing with passage of time. On 11<sup>th</sup> day 84% of wounds in test group were clean and healthy with no clinical signs of infection against only 18% in control group. Even healing process including epithelization was faster in test group with 85% of wound showing good epithelization against only 34% in control group.

As evident from table no.2, bacteriological examination by swab culture also supported well the clinical findings as in only 15% of test group swab cultures showed positive results against 71% in control group on 11<sup>th</sup> day after progressive decrease in number of positive cultures in test group from 3<sup>rd</sup> day onward.

Application of turmeric on superficial burn wounds didn't produce any adverse effect expect yellow discoloration. Fortunately, no mortality was noted in either group.

**Table.1:** Showing local appearance of superficial burn wounds (n = 228)

General appearance	3 <sup>rd</sup> Day		7 <sup>th</sup> Day		11 <sup>th</sup> day	
	Test group	Control group	Test group	Control group	Test group	Control group
Clean and healthy wound without infection	119 (52.2%)	38 (16.7%)	140 (61.4%)	40 (17.5%)	192 (84.2%)	41 (17.9%)
Epithelialization from margin & Bed	Good	-	140 (61.4%)	40 (17.5%)	194 (85.1%)	77 (33.7%)
	Fair	-	68 (29.8%)	78 (34.2%)	23 (10.1%)	63 (27.6%)
	Poor	-	20 (8.7%)	110 (48.2%)	11 (4.8%)	88 (38.6%)

**Table.2:** Showing number of significant positive swab cultures in superficial burns wounds (n = 228).

T/T group	3 <sup>rd</sup> Day	7 <sup>th</sup> Day	11 <sup>th</sup> Day
Test group	110 (48.2%)	84 (36.8%)	34 (14.9%)
Control group	188 (82.4%)	182 (79.8%)	163 (71.4%)

## DISCUSSION

Present study was undertaken to evaluate turmeric, an household remedy, as topical agent in superficial burns to test its antiseptic and healing effects in a scientific way to establish or refuse the fact widely mentioned in Ayurveda and popularly used as traditional medicine since time immemorial.

The present series included cases of only superficial burns of less than 10% to avoid undue risk as these burn cases are of non-serious and mild nature involving no risk of serious complication or death. No children below 15 yrs were included in the study for the same reason. Both test and control group included the same patient but patches on different areas to provide similar environment and general condition to both group to eliminate any bias and to extend perfect

matching in age, sex, weight, nutritional status, immune status and other characteristics.

Turmeric in present study was found to be effective as antiseptic and healing agent on local application in cases of superficial burns with clinically clean and healthy wound in significantly large number of cases for 3<sup>rd</sup> day itself and finally 85 % cases showing good healing on 11<sup>th</sup> day against 33% in control group. Even swab cultures were found to be positive on fewer cases in test group (48% in test group against 82% in control group) on 3<sup>rd</sup> day getting lesser and lesser with passage of time and finally on day 11 only 15% of test group showed the positive cultures against 71% in control group. These findings indicated probably, a gradual but sustained chemoprophylaxis by turmeric in local application, interfering less with epithelialisation. No side effect was noted in the present series in either group. Turmeric cream was found painless and soothing on local application.

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