

***Basella rubra* and *Bryophyllum*: a promising treatment for stone(pathari) disease**

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Abstract

The Bastar and another southern district of Chhattisgarh state is famous for Kulthi, Harnwa whose botanical name is *Basella rubra* and belongs to family Papilionatae/Papilionoideae. The soil texture of this region is very suitable for cultivation of kulthi and harnwa. The farmers of this area have been cultivating this crop for food from decades ago. The local knowledgeable people use Kulthi pods and other parts of plant for treatment of Pathari or stone disease. The medical science says that the responsible factors for this disease are the accumulation of calcium oxalate in gall bladder, kidney or uterus etc. Symptoms of this disease are seen mainly on these parts of body which ultimately result in loss of appetite and patient may even become anemic. The treatment of this disease by allopathic way is to dissolve the calcium oxalate by various drugs.

Keywords: *Basella rubra*, *Bryophyllum*, pathari

INTRODUCTION

In the present developing world the life style of human being has drastically changed and results in various types of diseases. Among them the one known to us, as stone disease is predominately spreading across the world.

Chhattisgarh specially its southern parts which is famous for its flora, fauna and rich tribal culture there is a great co-relation between nature and local tribal people. Here the treatments of such diseases are done by self developed methodology.

The stone disease (pathari) is positively treated through kulthi by local tribal people, which strike the modern medical science. On other hand the leaves of *Bryophyllum* which belong to Crassulaceae family is also being used for the treatment of stone disease (pathari) according to ayurvedic literature

METHOD AND METHODOLOGY

For verification of such local tribal remedies I did some experiments regarding to the treatment of stone disease (pathari) by extract of *Basella rubra* (kulthi) pods and leaves of *Bryophyllum*.

We know that the stone is formed by accumulation of calcium oxalate in gall bladder, kidney or uterus etc. So I used solid crystal of calcium oxalate for the experiment being conducted in treatment of stone disease by the extract of kulthi (pod) and *Bryophyllum* leaf.

Extract of kulthi (pod) and *Bryophyllum* (leaves) were taken in various concentrations and treated with the different amounts of calcium oxalate crystals. The quantity of calcium oxalate crystals taken for treatment was 0.5 mg, 1 mg, 1.5 mg, 2.0 mg up to 5mg weight respectively.

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Preparation of extract

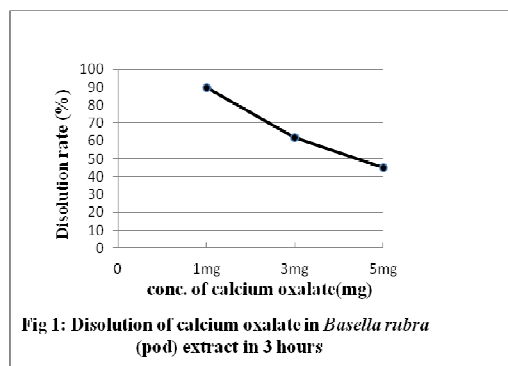
The pod of *Basella rubra* (5gm) was boiled in 10ml water and the temperature was maintained (95 -100°C) as the body temp.

The fresh leaf of *Bryophyllum* were smashed and diluted with water. The extract of *Bryophyllum* leaves was mild warmed before treatment

The treatment was carried out by three different ways:

- The calcium oxalate in above described quantity was treated with different concentration of the extract of kulthi (pods) and temperature was maintained approx. (95 -100°C).
- The calcium oxalate in above described quantity was treated with different concentration of the extract of *Bryophyllum* (leaves) and temperature was maintained (95 -100°C).
- The calcium oxalate in above described quantity was treated with different concentration of both extract of kulthi (pods) and *Bryophyllum* (leaves) and temperature was maintained approx. (95-100°C).

From the data obtained through the experiment the graph shown was plotted by which it was observed that the dissolution of calcium oxalate crystals in *Basella rubra* extract was rapid than in *Bryophyllum* leaves extract. But in the mixture of both the extract the dissolution of calcium oxalate was very rapid in same time as for individual extracts.



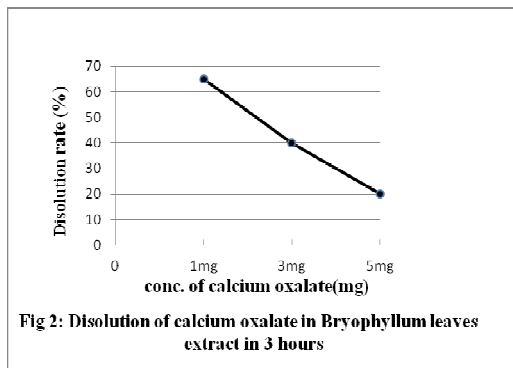


Fig 2: Disolution of calcium oxalate in Bryophyllum leaves extract in 3 hours

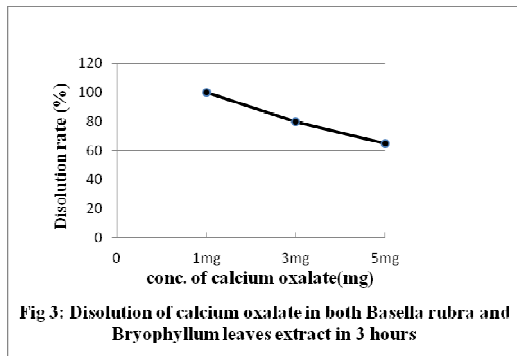


Fig 3: Disolution of calcium oxalate in both Basella rubra and Bryophyllum leaves extract in 3 hours

RESULT AND DISCUSSION

When 0.5 mg of calcium oxalate crystal was treated with extract of kulthi (pods) it was observed that after 3 hours the crystals dissolved completely. When 1 mg of calcium oxalate crystals was treated with extract of kulthi it was observed that after 3 hours only 90% of the crystals dissolved completely as above. When 3 mg of calcium oxalate crystals was treated with extract of kulthi it was observed that after 3 hours only 62% of the crystals dissolved completely. But in case of 5 mg of calcium oxalate crystals treated with kulthi extract only 45% of the calcium oxalate crystals dissolved after 3 hours but if the same reaction was allowed to remain for 2 hours more the calcium oxalate crystals dissolved completely (Fig 1).

Similarly Alok Ranjan Sahu, Niranjan Behera and S. P. Mishra (2010) reported that leaves of *Basella* is used externally for urticaria and in constipation.

In case of extract of *Bryophyllum* leaves when treated with the calcium oxalate crystal, the dissolving rate was very slow in respect to the volume of crystals taken. When 0.5 mg of calcium oxalate crystal was treated with extract of extract of *Bryophyllum* leaves it was observed that after 3 hours the crystals dissolved only 75%. When 1 mg of calcium oxalate crystals was treated with extract of *Bryophyllum* leaves it was observed that after 3 hours only 65% of the crystals dissolved completely as above. When 3 mg of calcium oxalate crystals was treated with extract of *Bryophyllum* leaves it was observed that after 3 hours only 40% of the crystals dissolved completely. But in case of 5 mg of calcium oxalate crystals treated with *Bryophyllum* leaves extract only 20% of the calcium oxalate

crystals dissolved after 3 hours (Fig 2).

Fauzia Yasir and Muhammad A. Waqar (2011) also reported the effect of two indigenous plants extracts of *Boerhavia diffusa* and *Bryophyllum pinnatum* on the crystallization of calcium oxalate crystals. Results showed significant activity of both extracts against calcium oxalate crystallization at different concentrations of *B. pinnatum* extracts. Tiwari *et al.* (2012) reported that *Bryophyllum pinnatum* play a vital role in treatment of kidney stone disease

But when both the extracts were mixed and treated with calcium oxalate crystal the dissolving rate became very rapid in comparison to the previous reaction. When 1 mg of calcium oxalate crystals was treated with both the extracts of kulthi and *Bryophyllum* leaves extract it was observed that after 3 hours the crystals dissolved completely. When 3 mg of calcium oxalate crystals was treated with extract of kulthi and *Bryophyllum* leaves extract it was observed that after 3 hours only 80% of the crystals dissolved completely. But in case of 5 mg of calcium oxalate crystals treated with kulthi and *Bryophyllum* leaves extract only 65% of the calcium oxalate crystals dissolved after 3 hours (Fig 3).

Overall the components present in extracts (leaves and pods) of both the plants enhance the reducing properties of the calcium oxalate crystals.

Similar result have also reported by Fauzia Yasir and Muhammad A. Waqar (2011) that *B. pinnatum* extracts have antiurolithic activity and have the ability to reduce crystal size as well as to promote the formation of calcium oxalate dihydrate (COD) crystals.

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