

# Use of clarification agents and methods on the development of pomegranate juice processing technology

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**SUMMARY :** Effects of methods and clarification agents on juice quality of pomegranate were studied. Juice extracted manually from arils of pomegranate cv. Bhagawa was clarified with gelatin, pectinase enzyme agents and centrifugation, homogenization and natural sedimentation methods with main purpose to reduce the amount of phenolic substances and to get clear sparkling, sweet juice. Different physicochemical properties viz., pH, TSS, total phenolic substances, total anthocyanins, acidity, sugars and sensory attributes like colour, appearance, transparency, taste and flavour were recorded. In each clarification method, phenolic substances were controlled and clear, sparkling and most appealing pomegranate juice was obtained. Turbid but sweet juice was obtained in homogenization method. Use of gelatin @ 1 g/l as clarification agent gave clear, sparkling juice by removing considerable amounts of tannins which is considered to be the most important quality parameter of pomegranate juice.

**KEY WORDS :** Pomegranate juice, Clarification, Gelatin, Pectinase, Polyphenols, Anthocyanins

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Pomegranate (*Punica granatum* L.), a superfruit, belongs to the family Punicaceae and is one of the favourite table fruit of tropical, sub-tropical and sub-temperate regions of the world having great processing potential. The fresh fruit is of exquisite quality as medicinal values and high consumer appeal. The fruit is consumed directly as fresh seeds as well as fresh juice that can also be used in beverages, juice concentrate jellies and used as flavouring and colouring agents. Industrial processing of the pomegranate in India is scarce due to lack of technological development though there is great demand for the pomegranate derived products. Indian pomegranate cultivars are sweet acidic in taste having excellent flavour and nutraceutical value. The edible part of the pomegranate fruit contains phenolic constituents which give colour, astringency and bitterness to the juice (De Simon *et al.* 1992). If the

pomegranate juice is not clarified, product has bitter, astringent taste with turbid, hazy appearance due to high tannin content and this limits the consumption of fresh pomegranate juice. The phenolic compounds cause formation of cloudy appearance of fruit juices in concentrates and storage (Spanos and Wrolstad, 1992). This deteriorates the product quality and shelf-life as well as consumer preference. Pomegranate juice contains only trace amount of pectin and juice can be filtered easily after pressing without clarification. But, clarification is necessary to prevent the formation of cloudy appearance during storage. The taste of the product is also improved by means of clarification (Bayinderli *et al.*, 1994). In pomegranate fruit, most of the tannins are present in rind and in seeds. During aril extraction they pass to the juice. Clarification or fining is one of the most important steps in processing fruit juice. Natural sedimentation is suitable for pomegranate juice. Effective use of clarification agents requires appropriate concentration.

The purpose of this study was to determine the effect of clarification agents and effective method on pomegranate juice.

## EXPERIMENTAL METHODS

### Fruits :

The pomegranate cv. BHAGWA fruits of proper maturity

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