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Wood chips: An alternative to wooden barrels for maturation of wild apricot vinegar

Statement of the Problem: Fruit vinegar is a fermented beverage from at least one kind of fruit. These vinegars are a rich source of disease-fighting phytochemicals such as polyphenols, flavonoids and also contain citric, malic, lactic, succinic, fumaric and tartaric acid. All fruit vinegars primarily contain acetic acid as the main organic acid. Production of high quality fruit vinegar depends on some of the major factors such as the choice of raw materials and the method of acetification. Fruit vinegars are considered superior than the other vinegars in term of sensory and nutritional qualities. Hence, in the present investigations the wild apricot fruit from the western Himalayan region of India was selected as a raw material. The fruit collected were analysed for various physicochemical and phytochemical components and found rich in total phenols, carotenoids and antioxidants. Further, the alcoholic and acetic acid fermentation was optimized for the production of quality fruit vinegar from wild fruit. The alcoholic fermentation of the must was found best in treatment prepared with 14oB initial total soluble solids. Further, the vinegar was produced using submerged fermentation using an inoculum of *Acetobacter aceti*. Further, the prepared vinegar was matured similar to wine maturation. But instead of oak wood barrels the wood chips of different woods such as *Quercus leucotrichophora*, *Bombax ceiba* and *Acacia* spp. were tried for maturation. Since, in western Himalayan region felling of oak wood trees is banned, hence, the use of wood chips during aging of wine or vinegar can be one of the alternative.

Methodology & Theoretical Orientation: The best wild apricot vinegar on the basis of physicochemical and sensory characteristics was further matured for a period of nine months with different wood chips (*Quercus leucotrichophora*, *Bombax ceiba*, and *Acacia* spp). Different toasted wood chips were added in each bottle at a concentration of 10g/l and the bottles were corked and kept at room temperature for a period of nine months. During maturation changes in various physicochemical and sensory characteristics were recorded at an interval of 3 months up to 9 months of maturation.

Findings: The vinegar matured with the addition of *Quercus leucotrichophora* wood chips showed highest (65%) value for DPPH antioxidant scavenging activity, phenols (266 mg/ml) and esters (184 mg/l). Amongst the different wood chips used for maturation maximum increase in the content of total antioxidant activity was recorded in vinegar matured with *Quercus leucotrichophora* wood chips followed by *Bombax ceiba* and *Acacia* spp wood chips. The vinegar matured with *Quercus leucotrichophora* wood chips also scored highest (18.7) total sensory score after a period of nine months and was superior in all the quality characteristics.

Conclusion & Significance: During maturation period there was an increase in various desirable characteristics such as phenols, esters, reducing sugars and antioxidants. The changes were recorded more in case of vinegar matured with wood chips. Among the various wood chips tried, the vinegar matured with *Quercus leucotrichophora* was rated

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as the best due to higher antioxidant activity, phenols, esters and sensory scores. Further, the addition of wood chips and

maturation increased the palatability and improved the flavor and aroma of wild apricot vinegar.

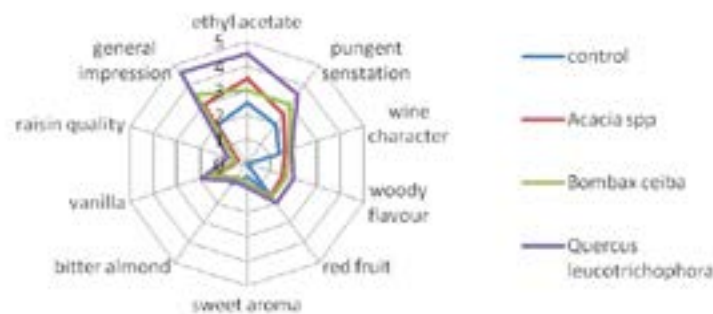


Fig 1: Sensory profile of wild apricot vinegar after 9 months of maturation with different wood chips

Biography

Somesh Sharma is an alumnus of Dr. Y. S. Parmar University of Horticulture and Forestry, HP, India. He is currently working as Associate Professor in School of Bioengineering and Food Technology, Shoolini University. His chief interests lie in food processing, food fermentation, food industry waste utilization, Post-harvest management of horticultural crops for sustainable development of rural population residing in Western Himalayan region. Another important contribution and achievement is the development of complete technology for the utilization of persimmon fruits for production of functional beverage. During last seven years he has filled 11 patents related to development of various kinds of fruit and vegetable based products and waste utilization.

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