



## VALORIZATION OF MEDICINAL AND AROMATIC PLANTS WASTE

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### Abstract

India being an agriculture-based country generates lots of waste from agricultural farming and agro processing industries. Agro and industrial waste particularly from medicinal and aromatic plants generate various solid wastes viz. distilled waste of various aromatic crops and the non-utilized parts of medicinal plants. On the other hand, India produced more than 6.0 million tons per annum of aromatic spent biomass, and waste disposal is a major problem in India. The way of managing the situation is to reduce the losses of biomass and to utilize the available material for the production of value-added products. The waste could be used for the production of fertilizers, fuel, value-added products through processing, extraction, hydrolysis or fermentation and as animal feed.

### Introduction:

Medicinal and aromatic plants have a significant part in people's health and well-being since they provide a variety of herbal medications and healthcare goods. As there is a high demand for natural bioactive compounds. Valorization is the process of increasing both the current and original value of something. Waste Valorization is the process of transforming waste materials into valuable goods such as materials, chemicals, fuels, or other sources of energy by reusing, recycling, or composting them. Though there has been a huge amount of agro and industrial

waste recorded from medicinal plants. The waste utilization will not only be economizing the cost of finished products but also reduce the pollution level.

### Various uses of Medicinal and aromatic plant waste.

#### Bioactive phytochemicals from MAPs residual biomass

Biomass of medicinal and aromatic plants is causing a serious problem to public health and the environment due to its poor management. The anti-cancer therapeutic chemicals withanolides are also found in the leaves of Ashwagandha (*Withania somnifera* L

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Dunal), which have comparable phytochemical contents to the roots. *W. somnifera's* bioactive withanamides are antioxidants with a protective action against beta-amyloid-induced cytotoxicity, which has been linked to Alzheimer's disease. Some aromatic plant decoction fluids have antioxidant and antiradical properties, Lactones made from *Lavandula* straw, like herniarin and coumarin, have antispasmodic and anti-inflammatory properties.

➤ **Spent water of essential oil industry-**

Spent water is also known as hydrosol, a pleasant-smelling liquid that may contain a significant amount of valuable oil. It also contains compounds like alcohol, ketone, phenol, ester, and methyl ether, among others. After steam/hydro-distillation is used to extract essential oils from fresh aromatic and medicinal herbs, a substantial amount of wasted water is created as a liquid waste.

➤ **As Compost-** Agricultural soils have also been found to benefit from compost and biochar in terms of physical, chemical, and biological qualities.

➤ **As substrate for biofuel and biogas production -** Biofuel is a term that refers to the process of converting biomass into liquid, solid, or gas fuel. steam distillation can overcome biomass recalcitrance in essential oil-bearing aromatic crops. Lemongrass and palmarosa produced 198 ml and 170 ml ethanol per gram biomass. lemongrass bio-oil has a high heat value, low PAHs, and nitrogenous chemicals, making it a viable choice for fuel.

➤ **As an Animal feed-** Medicinal and aromatic plant waste contains fiber such as cellulose, hemicellulose, lignin, and silica as well as crude protein quality, making it an ideal by-product for animal feed.





After the soluble have been extracted from ginseng with solvents such as water or alcohol (70-75%), a residue is produced, known as ginseng meal. Ginseng meal boosted the milk supply and milk quality of dairy calves, as well as the growth rate of chicks.

## Conclusion

Waste from medicinal and aromatic plants can be profitably recycled and bio converted, such as isolating phytochemicals and phenolic-antioxidants for use in dietary supplements, pharmaceuticals, cosmetics, and perfumes. Additional economic benefits will be generated for MAPs stakeholders by using residual biomass as a raw material for animal feed, biogas, biosorbent, soil amendment, and biopesticides.

