

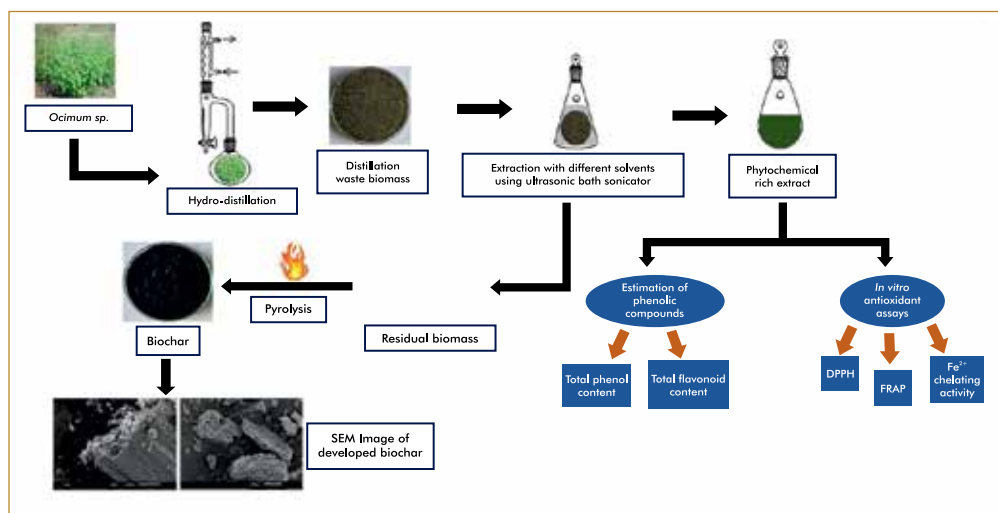
Process for utilization of distillation waste biomass of *Ocimum* sp.

***Ocimum* sp.** are commercially cultivated for essential oil. As the oil yield is very low (0.1-0.25 %, w/v), a large amount of waste materials is generated as distillation by-products. These materials can become a serious concern if not managed properly. Therefore, utilizing the residual biomasses through appropriate valorisation approaches is necessary. In this study, distillation by-products (distillation waste biomass and deodorized water) of two *Ocimum* sp. were explored for their versatile applications through extraction of phenolic compounds and utilizing the exhaustive biomasses to develop functional material like biochar.

Objective: To utilize distillation waste biomass of *Ocimum* sp. as source for antioxidants as well as biochar through waste to wealth approach.

The process involves extraction of phenolic compounds/antioxidants from distillation biomass followed by conversion of the residual materials into biochar. For extraction, solvents either sole or in aqueous combinations (25%, 50% and 75%) were used. The 50% aq methanol was found as best extraction solvent in terms of extraction yield, total phenol content and total flavonoid content. This solvent extract exhibited the highest antioxidant activity with IC_{50} of 94.02 $\mu\text{g/mL}$ for distilled *O. sanctum* and 89.48 $\mu\text{g/mL}$ for distilled *O. basilicum*. After extraction of bioactive compounds, the exhausted biomasses were pyrolyzed to form biochar. The porous surface morphology of biochar as observed through scanning electron microscopic image indicated the high surface area of biochar that provide support to soil microbiota, reduce the nutrient loss from soil, and act as potential soil amendment.

Commercial potential: With the help of this



technology, commercial production of biochar is possible utilizing the distillation waste biomass. As complete recycling of waste material is carried out through this process, this can be economically viable in terms of its commercialization.

For further interaction, please write to:

Dr Rohan Sarkar (Scientist), ICAR-Directorate of Medicinal and Aromatic Plants Research, Boriavi, Anand, Gujarat 387 310.
*Corresponding author: rohan.sarkar@icar.gov.in

**Flowers always make people better, happier, and more helpful;
they are sunshine, food and medicine for the soul.**

– Luther Burbank