

Review of: "Ayurveda & Bioactives as Adjuvant for Dna Modulation in Cancer Treatment & Adverse Drug Reaction [ADR] – A Glimpse of Traditional Indian Nanotechnology"

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Potential competing interests: No potential competing interests to declare.

The review article by Hema and Utkarsh is certainly thought-provoking. It strived to bring out the advantages of herbal adjuvant therapies in cancer treatments. It also highlighted a few illustrative cases wherein Ayurvedic medicines were used as standalone therapies and the outcomes thereof. Under the discussion part, the article highlighted the possible molecular mechanisms of herbal adjuvants under different headings, on the basis of reviewed publications. In a nutshell, the article is structured well through an exhaustive study.

However, I have the following comments and suggestions.

- In the abstract, the authors have highlighted quercetin. The flavonoid is present across a large number of botanicals. It is known for its biological effects, including anti-inflammatory effects. However, not all the herbs containing the molecule are used for similar/common clinical conditions. The use of herbs in Ayurveda, or any traditional system of medicine, goes by a selective approach. Any specific credit to the molecule may not be scientifically tenable.
- Antioxidant effects of medicinal plants, fruits, vegetables, and other superfoods and their constituents are widely claimed and projected as a panacea for the suffering world. Thousands of antioxidants found their way into departmental stores. But can we depend on universal antioxidants across all diseases? Science doesn't go by universal solutions; hence, we may need some disease-specific or tissue-specific molecules, herbs, or their formulations. Hence,
- The research on herbal drugs in the context of cancer can be twofold, viz., (1) the discovery of new anticancer molecules or the development of anticancer medicines *per se*. (2) added advantages of adjuvant therapies. The second one may be regrouped into (2.a) augmentation of therapeutic outcome of chemotherapy (2.b) radioprotective effects for use during radiotherapy (2.c) adjuvants to address ADRs of chemotherapy like nausea/vomiting, immunosuppression, alopecia, etc.
- Current research on herbal agents needs to be considered from this perspective. We need to infer the ongoing research by classifying herbal agents into the above groups. Experts may like adding more such groups specifically relevant to cancer therapies. There is a need to have insights into these individual groups and the current state of the art for each of them.
- My comments do not undermine the effort of the authors in any manner. The present article provided an overview of adjuvant therapies. The authors have a credible foundation of published research documents. I suggest the authors to continue it and review the current state of the art for individual groups indicated above.

I congratulate Hema and Utkarsh on a brilliant piece of their publication. Certainly, it made me polish and refine my thoughts.