

Food tablet manufacturing strategies: Research data on effervescent food supplements

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Abstract

Recently, the potential efficacy of the bioactive phenolic from natural sources has been the focus of great attention owing to their health benefits to human health for reduced risk of coronary heart problems and selected cancers. Food tablets as dietary supplements, and fortified foods, food by-product based food powders may be great value-added products for getting healthy bioactive components. Nutraceutical food tablets has been prepared by direct compression method through selected tablet machines and has been manufactured according to established prescription methods. The functional constituents of the foods, some preferable functional foods or some functional plant/fruits/vegetables/spice foods has been standardized as the nutraceutical product and generate under good manufacturing practices (GMPs). Primarily, a nutraceutical or selected food must be detected for "non-toxic food constituent strategy" by advanced toxicity analyses, then it must be detected and analysed in terms of health benefits including disease treatment and/or prevention. Uniquely containing activated phenolic antioxidants that have been naturally extracted to be highly potent and easily absorbed by your body in food tablets. Activated phenolic antioxidants are derived from the healthiest of plants, fruit, vegetable and spices. A wide range of free radicals are neutralized by absorption of antioxidant phenolic through effervescent; thence body cells are protected from damage and inflammation. Effervescence tablet has been proved its utility as an oral delivery system in the pharmaceutical and dietary industries for decades. In effervescent nutraceutical technology; a balanced ratio of acids and carbonates are used for forming a buffer and it has optimal compatibility with the stomach. Gas bubbles occur from the liquid after chemical reaction by adding water; alkali metal bicarbonates and acids (majorly citric or tartaric acids) are utilized to produce effervescence. In effervescent system, when organic acid and bicarbonate get together in the water, CO₂ is released; the solving process is performed in 17-20 °C water. The foam of them helps to kill the local bacteria. Food tablet is described as unit dose, temper evident, solid

preparations including one or more active ingredients or whole food powder. Patient and/or consumer demand, routes of drug delivery, oral utilization capacity, the flexible design of dosage forms as technical manufacturing parameters has been considered; also the bulk density (g/ml), the tapped density (g/ml) as pre-compression parameters have been confirmed while thickness (mm), hardness (kg/cm²), % weight variation, % friability, % in-vitro drug release as post-compression parameters have been carried out as physiochemical properties. Among the alkali sources, sodium carbonate is preferred due to its low cost, high solubility and intensity of reaction than potassium carbonate and bicarbonate. Poly vinyl pyrrolidone (PVP) is used as binder in effervescent; its form is as dry powder or wet forms of aqueous or hydro alcoholic solutions Water-soluble lubricants, colours, flavourings and sweeteners are also added as other ingredients. Mannitol and PEG 6000 are other utilized effective binders. At production stage in tablet machine, relative humidity should be low ($\leq 25\%$) and ambient temperature should be at room temperature ($24 \pm 1^\circ\text{C}$). Tablet forming quality parameters (weight, hardness, pH, solution time and friability) are inspected. Probiotics are living microorganisms that confer benefits on the recipient health when administered in appropriate amounts. To define the composition of effervescent probiotics in tablet form, an assessment of the component's effects on the viability of the microorganisms are performed. Prebiotics are food ingredients that induce the growth or activity of beneficial microorganisms (e.g. bacteria and fungi). Approximately 47% of chicory root fibre contain the prebiotic fibre inulin; inulin nourishes the gut bacteria, improves digestion and helps relieve constipation. Tablets including prebiotics have metabolic properties and improves the intestinal ecosystem and colon cells, stimulating the peristalsis, improves lipids and reducing the cholesterol and triglyceride serum levels and also facilitates the mineral salt absorption. The powder blend has been thoroughly mixed with talc and magnesium stearate and compressed into a 300-400 mg tablet using single rotatory punching machine based on tablet processing strategy. Among the trial /serial tablet formulations; me sir

effervescent tablet could be more efficacious owing to majorly cinnamaldehyde (as v/v) whereas black mulberry effervescent tablet could be more beneficial due to the presence of moracin and aligning phenolic anticarcinogenics and also "mandarin peel effervescent tablet could be salutary because of its naringenin and hesperidin flavanone phenolic bioactive. Recently, the potential efficacy of the bioactive phenolic from natural sources has been the focus of great attention owing to their health benefits to human health for reduced risk of coronary heart problems and selected cancers. Food tablets as dietary supplements, and/or fortified foods, food by-product based food powders may be great value-added products for getting healthy bioactive components. Nutraceutical food tablets has been prepared by direct compression method through selected tablet machines and has been manufactured according to established prescription methods. The functional constituents of the foods or some preferable functional foods must be standardized as the nutraceutical product and generate under good manufacturing practices (GMPs). Primarily, a nutraceutical or selected food must be detected for "non-toxic food constituent strategy" by advanced toxicity analyses, then it must be detected and analysed in terms of health benefits including disease treatment and/or prevention. Food tablet is described as unit dose, temper evident, solid preparations including one or more active ingredients or whole food powder. Patient and/or consumer demand, routes of drug delivery, oral utilization capacity, the flexible design of dosage forms as technical manufacturing parameters has been considered; also the bulk density (g/ml), the tapped density (g/ml) as pre-compression parameters have been confirmed while thickness (mm), hardness kg/cm², % weight variation, % friability, % in- vitro drug release as post-compression (parameters have been carried out as physiochemical properties. The powder blend has been thoroughly mixed with talc and magnesium stearate and compressed into a 300-400 mg tablet using single rotatory punching machine based on tablet processing strategy. Among the trial /serial tablet formulations; "miser effervescent tablet" could be more efficacious owing to majorly cinnamaldehyde (as v/v) whereas "black mulberry effervescent tablet" could be more beneficial due to the presence of moracin and aligning phenolic anticarcinogenics and also "mandarin peel effervescent tablet" could be salutary because of its naringenin and hesperidin flavanone phenolic bioactive. In this keynote workshop presentation content, the innovative and conventional food tablet processing strategies has been given with discussed chemical characterization, functional properties, their unique bioactive features, ant oxidative, ant carcinogenic reports of above- mentioned developed tablets.

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