বাংলাদেশ স্ট্যান্ডার্ডস এন্ড টেস্টিং ইনস্টিটিউশন
শিল্প মন্ত্রণালয়
গণপ্রজাতন্ত্রী বাংলাদেশ সরকার
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মুজিববর্ষের দর্শন
টেকসই শিল্পায়ন।

বিএসটিআই'র গবেষণা প্রস্তাব

Sl. No. & Title	Description
1. Title of the Research	Development of an improved method in BSTI for analysis of Benzoic Acid and Sorbic Acid for fruits and vegetable products.
2. Research Problem	The producers have been using Benzoic Acid and Sorbic Acid as common chemical preservatives in fruits and vegetable products. There are many defined limits of preservatives in product categories in BDS. The existing method of BSTI is time consuming and manually operated. Therefore, it is necessary to develop an improve method to determine Benzoic Acid and Sorbic Acid accurately in the BSTI laboratory through High Performance Liquid Chromatography (HPLC).
3. Justification	The main route of exposure of the general population to benzoic acid and sorbic acid is likely via foodstuffs that contain the substances naturally or added as antimicrobial agents. There are a few analyses of processed foodstuffs available. They refer to different types of food items like fruit juice, fruit drinks, tomato ketchup etc. Food additive exceeding the permitted levels may cause some adverse reactions, including metabolic acidosis, convulsions, asthma, and allergic reactions. Excess amount of additives are introduced to the food, or the wrong additive is introduced through formulation error. In fruit juices carcinogenic compound benzene is produced due to the presence of benzoic acid and ascorbic acid and this is stimulated by the exposure of light and heat. BSTI set the maximum level of Benzoic and Sorbic acid in many fruit and vegetable product like Fruit juice, Fruit drinks, Fruit -Squash, Jam, Jelly, Fruit Syrup, Tomato ketchup, Tomato paste etc. Bangladesh Food Safety Authority (BFSA) also published a regulation regarding use of additives in 2017. Now many company exporting processed fruits and vegetable products, so it will increase the income of the Government of Bangladesh as well as of BSTI. So it is necessary to analyze Benzoic and Sorbic acid accurately.
4. Gap of Previous Research	Presently titrimetric method is using in BSTI for analysis of Benzoic acid. There are many chemical steps involved in this method and sometimes it is difficult to interpret accurate result from titrimetric method.
5. Audience	The Scientist, Laboratory analyst throughout the world will be the audience.
6. Questions	What are the demerits of the existing method? How BSTI can develop a method to be effective, easier, rapid and fit for purpose for analysis of Benzoic and Sorbic acid by using HPLC in BSTI Laboratory for fruits and vegetable products.
7. Purpose	To develop an efficient and improved method for analysis of Benzoic and Sorbic acid by HPLC in BSTI Laboratory for fruits and vegetable products.
8. Title	Development of an improved method in BSTI for analysis of Benzoic Acid and Sorbic Acid for fruits and vegetable products.
9. Methodology	Extraction of benzoic acid and/or sorbic acid from a test portion will be done by using a mixture of ammonium acetate buffer solution and methanol, under acidic condition. The concentration of benzoic and/or sorbic acid will be determined by means of high performance liquid chromatography (HPLC) using a reverse phase column and ultraviolet (UV) detector. This validation is to prove that the method developed for the determination of benzoic and/or sorbic acid in fruits and vegetable products is suitable for its intended use "*fit for purpose*". Method Validation will performed using Apple juice as a representative matrix.

10. Time Frame and Tentative Budget	The project needs 06 (Six) months time depending on financial and logistic support. It requires approximately Taka 1,50,000/- (One lac and fifty thousand) for sample collection, procurement of following reagent, chemicals, Certified Reference Materials, Spares of HPLC, sample preparation accessories etc. a) Certified Reference Materials- Tk. 40,000 (Forty Thousand only). b) Reagent and Chemical- Tk. 20,000 (Twenty Thousand only). c) Consumables of HPLC- Tk. 60,000 (Sixty Thousand only). d) Contingency, Travel, Training, Stationary, etc. and others for research work Tk. 30,000 (Thirty Thousand only). This is a tentative budget. Expenditure for each category may increase or decrease at purchase time (with constant total budget).
11. Bibliography	Bibliography will be given at the end of research paper.

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