Introduction Acne, also known as acne vulgaris, is a common skin condition that mainly affects teenagers.Hibiscus sabdariffa extract adds inflammatory benefits targeting key factors in acne formation.Four experimental formulas suggested by a D-optimal design Ingredients F1 F2 F3 F4 Borax Tween 80 Surfactant (gm) 0.2 0.4 0.2 0.4 Bees wax (gm) 2.5 2.5 2.5 2.5 Soft paraffin (gm) 2.5 2.5 2.5 2.5 Grape seed oil and Vit E (gm) 10 10 10 10 Hibiscus extract (gm) 4.8 4.8 4.8 4.8 Sodium salicylate (gm) 0.25 0.25 0.25 0.25 2.2.2 Preparation of Hibiscus sabdariffa L. Extract For preparation of water extraction, 25 gm sample of roselle was added to 250 ml distilled water and the mixture was boiled for 10 min while stirring.Viscosity not only affects features such as spreadability and skin feel, but may also affect the skin penetration of incorporated actives and lead to a higher physicochemical stability of the formulation (15) cP =TK xSMC x Were, Cp= viscosity TK = Torque % SMC = Spindle multiplier constant Spreadibility test The herbal cream sample was applied between the two glass slides and was compressed between the two glass slides to uniform thickness by placing 100g of weight for 5 minutes then weight was added to the weighing pan.The development of acne involves four key factors: firstly, an androgen-induced increase in sebum production; secondly, abnormal keratinization leading to clogged follicles; thirdly, the growth of Cutibacterium acnes bacteria; and finally, inflammation of the skin around the affected area (1).2.2.3 In vitro Characterization of herbal cold cream (11): Macroscopical examination: Topical cream was individually tested for the homogeneity and phase separation and was evaluated on its appearance in terms of color, pearlescent and roughness and graded accordingly also the washability of the cream was evaluated and observed on the running water.Bees wax, soft paraffin, Borax, Tween and Sodium salicylate were supplied by Department of pharmaceutics, College of Pharmaceutical Sciences and Drug Manufacturing, Misr University for Science and Technology (6 October, Giza, Egypt).Formulation of Hibiscus sabdariffa L. cold cream involves three steps: In the formulation of the cold cream water-in-oil (W/O) emulsion (10), the aqueous phase is formed by blending 4.8 ml of the Hibiscus extract with 0.22 g of either Borax or tween and 0.25 g of sodium salicylate in a 50 ml beaker.This mixture is then heated to 75?C using a water bath (Lab-Line Instruments, Melrose Park, IL, USA) Concurrently, the oil phase is prepared by melting 2.5 g of beeswax, 2.5 g of soft paraffin, 10 ml of grape seed oil, and vitamin E in a separate porcelain dish.Notably, hibiscus extract demonstrates significant antibacterial effects against Propionibacterium acnes and Staphylococcus epidermidis, which are associated with inflammatory acne.fig.1:Response surface curve showing interaction between PH and A(surfactant type)B(surfactant concentration)fig2:Response surface curve interaction between spreadability and(A:surfactant type) B(surfactant concentration)fig3:Response surface curve interaction between viscosity and (a:surfactant type)B(surfactant concentration) Optimization of Formulation Components the process was optimized for all three responses.Among the various ingredients investigated for their therapeutic properties in acne management, grape seed and hibiscus extract have garnered attention due to its potential benefits.2 Materials and methods: 2.1 Materials: Grape seed oil and vit E was supplied by Raw African for Cosme pharmaceutical (Nasr City, Cairo, Egypt).Factors Low limit (-1) High limit (1) A: surfactant type Borax Tween 80 B:surfactant concentration (%) 1 2 responses Goals Y1: PH 4:6 Y2: Spreadability Maximize Y3: Viscosity Maximize Table 2.Topical products should ideally have a pH in the range of 4 to 6 for

optimal skin health.(14) Viscosity Viscosity of the herbal cream was determined with the help of Brookfield viscometer at 100 rpm with a spindle number 40.(13) Spreadability = M = weight tied to upper slide L = length moved on the glass slide T = time taken to separate the slide 3 RESULTS AND DISCUSSION Macroscopical evaluation: Different batches of cream were prepared and subjected to physico-chemical characterization to assess the various characteristics.Responses measured Formulations Colour PH Viscosity Spreadability Washability F1 Bright magenta 5.5 520 66 Easily washable F2 Faint violet 6.07 282 50 Easily washable F3 violet 5.3 412 56 Easily washable F4 violet 5.3 435 60 Easily washable PH: The pH of the cream was found to be in the range of 5.3 to 6.07.Additionally, grape seed oil exhibits antimicrobial properties, making it effective in combating bacteria that can contribute to various skin concerns, including acne.Grape seed oil is known for its high antioxidant capacity, attributed to its high content of gallic acid, catechin, epicatechin, procyanidins, and proanthocyanidins.Furthermore, it exhibits protective effects against oxidative stress caused by UVB rays, thereby reducing damage to collagen and elastin fibers in the skin (5).In this study, we aim on utilizing Hibiscus sabdariffa extract and grape seed oil to treatment own to their antioxidant, antibacterial, and anti-inflammatory actions to treat acne.The factors were calculated by low and high, at 2 levels indicating (-1, +1) respectively, the dependent responses were PH (Y1), spread ability (Y2) and viscosity (Y3) Table 1 illustrates the independent factors with targeted responses.Spreadability of semisolid formulations, that is, the ability of a cream to evenly spread on the skin, plays an important role in the administration of a standard dose of a medicated formulation to the skin and the efficacy of a topical therapy.Our cream falls into the category of W/O emulsions, which offers distinct advantages in terms of moisturization and the formation of a long-lasting protective barrier on the skin (6).The final optimal experimental parameters were calculated using the extensive grid search and feasibility search provided in the Design Expert software.Forms a lasting layer promoting skin healing and comfort.The incorporation of these ingredients into one formula F1 shows promise as a treatment option, for individuals dealing with acne vulgaris..