

diffusion methods. Superoxide dismutase (SOD), catalase (CAT), glutathione peroxidase (GPx) and lipid peroxidation (MDA) activities were evaluated before and after UVB irradiation in a guinea pig model and HaCaT cells. Heme oxygenase-1 (HO-1) enzyme activity was measured in the epidermis of guinea pigs treated by different creams before and after UVB irradiation. Treatment with compositions containing silymarin powder (SM) dissolved in TC and sucrose stearate SP 50 or SP 70 resulted in increased activities of all reactive oxygen species (ROS) eliminating enzymes in the case of pre- and post-treatment as well. Reduction in the levels of lipid peroxidation end products was also detected after treatment with these two compositions. Post-treatment was more effective as the increase of the activity of antioxidants was higher. Lower HO-1 enzyme levels were measured in the case of pre- and post-treatment groups compared to control groups. Therefore, this study demonstrates the effectiveness of topical formulations containing silymarin in inhibiting UVB irradiation induced oxidative stress of the skin.

Gao, Y. et al. (2013). "A protocol for the classification of wet mass in extrusion-spheronization." *Eur J Pharm Biopharm* 85(3 Pt B):996–1005.

In this study, a structured protocol for the classification of wet mass in extrusion-spheronization was developed to predict formation and pellet quality. The wet masses of 120 formulae were prepared taking microcrystalline celluloses as pelletization aid and lactose, hydroxypropyl methylcellulose grades, herbal medicines as model drugs. Physical properties of the wet masses such as hardness, adhesiveness, springiness, cohesiveness, chewiness, and resilience were tested, respectively, using a texture analyzer. Particles were produced by spheronization process, and the quality of spherical pellets was also evaluated. Data were analyzed by principal component analysis, factor analysis, and classification analysis. The wet masses could be classified into five groups taking the ratio of hardness to springiness (Ha/Sp) as the first classification index and chewiness, resilience as the second and the third classification index. The wet masses of different classification could correspondingly form the different shapes. So, a new protocol could be devised, for example, if the range of Ha/Sp of the wet masses was 30,992–47,689 g, at the same time, the value of chewiness was less than 4842, and the value of resilience was no more than 0.139; it would form spherical pellets under the experimental condition. These results demonstrate that the proposed protocol could be a valuable asset in a formulation development project to assess the physical properties of wet masses and to predict formation and pellet quality. So, the tedious and expensive pre-production (pre-formulation and optimization) work could be considerably reduced.

Ghosh, A. et al. (2017). "Male contraceptive efficacy of poly herbal formulation, Contracept-TM, composed of aqueous extracts of Terminalia chebula fruit and Musa balbisiana seed in rat." *Pharm Biol* 55(1):2035–2042.

CONTEXT: *Terminalia chebula* Retz (Combretaceae) and *Musa balbisiana* Colla (Musaceae) have a traditional reputation as a male contraceptive. OBJECTIVE: To determine the hypo-testicular activity of aqueous extracts of Terminalia chebula (fruit) and Musa balbisiana (seed) separately, and in composite manner at the ratio of 1:1 named as "Contracept-TM" compared to cyproterone acetate (CPA), for developing a polyherbal contraceptive. MATERIALS AND METHODS: The separate extract of above said plants or "Contracept-TM" at the dose of 40 mg/100 g body weight of