Due to the growing concern of the population regarding health, sensorially pleasing foods must also be safe and nutritious. Yogurt is the product that most arouses the desire of Brazilian consumers when launched, being considered a symbol of healthy product with potential growing in market innovations. *Nopalea cochenillifera* (L.) *Salm-Dyck* fruits can be consumed *in natura* or processed in different ways, such as candies, juices and jellies. From the nutritional point of view, stand out carbohydrates which contribute to high sweetness; minerals such as calcium, magnesium and potassium; vitamins (A and C); as well as constituents with antioxidant properties such as vitamin C, betalains and indicaxanthines. The objective of this work was to develop a light yogurt with functional potential, flavored with *Nopalea cochenillifera* jelly. The physicochemical characteristics of the fruit pulp, UHT skimmed milk and the developed yogurt were determined. The jelly was evaluated for the presence of glochids and total soluble solids content. Texture, antioxidant capacity and phenolic content were evaluated in the final product. Also, instrumental colour analysis for both yogurt and jelly were performed. The yogurt was prepared in three repetitions and analyzes performed in triplicate. *Nopalea cochenillifera* pulp presented lower values of total soluble solids, proteins and lipids when compared to pulp of other species, however, the moisture content was higher. The color showed a shade between blue and red, indicating a tendency to purple coloration. The results obtained for physicochemical analysis of skimmed UHT milk and yogurt developed with 3% jelly were in accordance with the standards established in current Brazilian legislation. Elaborated yogurt stood out for its high levels of phenolic compounds (640.69 mg EAG/100g) and antioxidant activity (72.7 µMOL Trolox/g). In the texture analysis of the final product, all parameters (firmness, consistency, cohesion and viscosity index) were similar to the natural yogurt (control). *Nopalea cochenillifera* fruits could also be used as a natural colorant in yogurts, even at low concentrations. Also, it can be an alternative to the use of synthetic pigments. The yogurt elaborated in this study may be an option for consumers seeking low-fat foods and beverages that bring some extra health benefits. However, the microscopic analysis of the jelly detected the presence of glochids, which shows the need for an efficient technique to remove them from the fruit peel in order to guarantee the safety of the final product and avoid the risk of possible lesions to consumers.