Aloe vera can be separated in a liquid fraction (exudate) and a mucilaginous pulp (gel). Recently, the antifungal activity of their components has been reported. The common technique for gel extraction from A. vera leaves are the traditional manual (in this case the liquid fraction is not separated) and a mechanical methods. Moreover, as a result of its processing the bagasse is obtained. The aim of this work was to recover and characterize the fractions of A. vera and to identify the fraction with highest antifungal activity against phytopathogen postharvest fungi (Botrytis cinerea and Penicillium spp.). A simple and inexpensive extraction method was used to obtain A. vera fractions from 50 kg leaves by means of a designed laboratory roll processor. The yields of extraction were as follows: 15.76% ± 4.0, 51.20% ± 5.20, and 33.02% ± 5.0 for gel, liquid fraction and bagasse, respectively. The three fractions were physico-chemically characterized (protein, monosaccharide composition, ashes, lipids) and resulted to be mainly composed by glucose and mannose in all the cases. Results showed the effectiveness of A. vera fractions in the growth control of phytopathogen postharvest fungi, with visible reduction of fungal growth.