The use of edible films to release antimicrobial constituents in food packaging is a form of active packaging. Antimicrobial properties of spice extracts are well known, however their application to edible films is limited. In this study, antimicrobial properties of whey protein isolate (WPI) films containing 1.0-4.0% (wt/vol) ratios of oregano, rosemary and garlic essential oils were tested against Escherichia coli O157:H7 (ATCC 35218), Staphylococcus aureus (ATCC 43300), Salmonella enteritidis (ATCC 13076), Listeria monocytogenes (NCTC 2167) and Lactobacillus plantarum (DSM 20174). Ten millilitres of molten hard agar wits inoculated by 200 μl of bacterial cultures (colony count of 1 x 10^8 CFU/ml) grown overnight in appropriate medium. Circular discs of WPI films containing spice extracts, prepared by casting method, were placed on a bacterial lawn. Zones of inhibition were measured after an incubation period. The film containing oregano essential oil was the most effective against these bacteria at 2% level than those containing garlic and rosemary extracts (P < 0.05). The use of rosemary essential oil incorporated into WPI films did not exhibit any antimicrobial activity whereas inhibitory effect of WPI film containing garlic essential oil was observed only at 3% and 4% level (P < 0.05). The results of this study suggested that the antimicrobial activity of some spice extracts were expressed in a WPI based edible film. (c) 2006 Elsevier Ltd. All rights reserved.