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Antioxidant studies of pre-treated packaged prunes prepared from plum (*Prunus domestica*) cv. STANLEY

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ABSTRACT : Studies on the preparation and packaging of prunes from plum (*Prunus domestica*) cv. Stanley was carried out at the Division of Post Harvest Technology, SKUAST-Kashmir. Before preparing prunes the plum was subjected to various pre-treatments *viz.*, citric acid treatment (1% for 1 minute), lye peeling (1.5% NaOH for 1 minute), potassium hydroxide treatment (1% for 5 minutes) and sucrose treatment (12% for 8 minutes). After giving the pre-treatments, the prepared fruit lots were loaded on trays in a cabinet dryer and dried at 60 ± 2° C. The dried fruit was packed in two different packaging materials *viz.*, polyethylene (Gauge : 300) and aluminum foil (Thickness : 11 µ ; Width : 300 mm). The prunes were then evaluated for quality studies during ambient storage of 80 days (Average temp.12.26 °C, RH 70%). Antioxidant analysis reveals that drying destroyed anthocyanins and there was a significant decrease in carotenoids also. Ascorbic acid was drastically reduced in relation to process temperature. Economic studies of dried plums were also conducted.

KEY WORDS : Antioxidants, Aluminium foil, Cabinet drying, Polyethylene, Prunes, *Prunus domestica*, Stanley

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Main processed products made from plums include compotes, mousse, pulp, dried and candied fruit, frozen fruit, jams, traditional Polish plum preserves "powidla" and alcoholic beverages. Thanks to their taste and dietary value they are willingly consumed by children and adults of different age groups. Plum fruit contain many sugars, organic acids and other compounds important from the dietary point of view. Plum is also an important export fruit, both fresh and frozen (Crisosto *et al.*, 1995). Plums have low calorie content and relatively high nutritive value. They contain carbohydrates, first of all sucrose, glucose and fructose, organic acids, e.g. citric and malic acids, fibre (pectins), tannins, aromatic substances and enzymes. These substances determine nutritive value and taste of plums (Ertekina *et al*., 2006). This fruit is also rich in many minerals and vitamins (C, A, B1, B2), essential for the appropriate functioning of the human organism. Contents of minerals in plums increase as fruits ripen. Plums contain the highest amounts of potassium, phosphorus, calcium and magnesium. Plums are fruit rich in phenolic compounds, characterized by relatively high antioxidant activity, higher than e.g. oranges, apples or strawberries (Kayano *et al*., 2002; Leong and Shui, 2002). These fruit influence peristaltic movements, slow down the absorption of carbohydrates, increase lipid breakdown in the human organism, enhance the sensation of satiety, reduce the levels of total cholesterol and its LDL fraction, blood serum triglycerol and homocystein concentrations and have a protective action on blood vessels.

Due to the high potassium content and an advantageous sodium: potassium ratio, plums are recommended to patients suffering from arterial hypertension (Lucas *et al.*, 2004). High drying temperatures used in mechanical air dehydration may lead to phenolics depletion,while carotenoids are mainly degraded by the exposure to large amounts of oxygen. The literature does not clearly explain the effect of drying on the phenolic content and antioxidant activity of apricot fruit (Piga *et al.*, 2004). The European plum *Prunus domestica* is one of the most important temperate zone stone fruits. Plum *Prunus domestica* cv. Stanley is a kind of drupe. It belongs to genus *Prunus* of the sub-family Prunoideae and family Rosaceae.