

Supplementary Data

PVA- Nano Cellulose Active Packaging Film with Clay Nano Particles and Fennel Seed Essential oil for Enhanced Thermal, Barrier, Antimicrobial, Antioxidant and Biodegradation property to improve shelf life of Tofu

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Table captions:

Table S1: Cost analysis of 100gm of BBNCP-FSEO-MCNP-PVA nanocomposite film.

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Particulars	Unit	BBNCP-FSEO-MCNP-PVA nanocomposite film
Cost of BBNCP preparation	USD	0.016
Cost PVA	USD	0.0664
Operational charges for nanocomposite film	USD	0.025
Total Cost	USD	0.1074

*BBNCP-Box Badam Nano cellulose Particles, FSEO- Fennel Seed Essential Oil, MNCP- Montmorillonite nano clay particles, PVA- Polyvinyl Alcool, USD- United State Dollar

Supplementary data Table (2): Solubility % of control neat PVA, BBNCP-FSEO-MCNP-PVA nanocomposite films.

*PVA-Polyvinyl Alcohol, BBNCP-Boxbadam nano cellulose particles

*Data are expressed as means \pm the standard deviation (n = 3). In each row, each value followed by a different letter is significantly different (P \leq 0.05) as determined by Tukey's posthoc test (SPSS v.22).

Solubility %		
Time(min)	Control Neat PVA	BBNCP based nanocomposite
5	5±0.03 ^a	5±0.01 ^a
10	10.01±0.02 ^b	5±0.02 ^a
15	16.33±0.05 ^b	6.30±0.03 ^a
20	25.23±0.01 ^b	10.25±0.05 ^a
25	29.19±0.05 ^b	10±0.02 ^a
30	35.14±0.02 ^b	12.32±0.03 ^a
35	41.32±0.03 ^b	13.15±0.06 ^b ^a
40	55.32±0.05 ^b	15±0.01 ^a
45	60±0.02 ^b	16±0.04 ^a
50	72.22±0.06 ^b	20±0.03 ^a
55	93.22±0.02 ^b	21±0.01 ^a
60	100 ^b	25±0.02 ^a