RESULTS

Twenty-nine fungal isolates were isolated from different agriculture wastes. Reducing sugars, CMCase and protein of these isolates had been determined as indicated in Table (1). Five of these isolates were selected for studying cellulases production on different agriculture wastes. Four of them gave high CMCase production and one gave low CMCase production. These isolates were *Aspergillus niger* MAM-F5, *Aspergillus niger* MAM-F13, *Aspergillus* sp. MAM-F23, *Aspergillus* sp. MAM-F35 and *Aspergillus* sp. MAM-F40.

These five strains produced different amount of CMCase, reducing sugars and soluble protein. Isolate *Aspergillus* sp. MAM-F23 gave the highest CMCase (233U/ml) and reducing sugar (1270µg/ml), followed by isolate *Aspergillus* sp. MAM-F35 which gave CMCase (207 U/ml) and reducing sugar (1050µg/ml). However, isolate *Aspergillus niger* MAM-F5, gave the same amount of reducing sugar (1050µg/ml) as isolate *Aspergillus* sp. MAM-F35 but its CMCase was very low (46U/ml). Soluble protein, also varied greatly, they ranging between 8 and 124µg/ml as indicated in Table (1).

Production of carboxymethyl cellulase (CMCase), Filter paperase (FPase), Avicelase and protein on solid state fermentation of four different agriculture wastes had been shown in Table (2) and Figure (1) for the standard strain *T. viride.* The results revealed that wheat straw was the best substrate for CMCase (556 U/ml), while wheat bran was the best for FPase and Avicelase (142 and 46 U/ml) respectively.

CMCase and Avicelase were best produced on wheat straw (396 and 41 U/ml) respectively by *Aspergillus niger* MAM-F13 as indicated in Table (3) and Figure (2). However the best substrate for FPase and protein by this strain was wheat bran (120 U/ml and 456 µg/ml) respectively.

The results of *Aspergillus* sp. MAM-F40 revealed that wheat straw was the best substrate for all cellulases as indicated in Table (4) and Figure (3). This strain produced 485 U/ml CMCase, 95 U/ml FPase and 32 U/ml Avicelase.

Table (1): Reducing sugars and Carboxymethyl cellulase produced by different fungal isolates.

Isolate code	Reducing sugar (μg/ml)	CMCase (U/ml)	Soluble protein (μg/ml)
Aspergillus sp. (MAM-F1)	640	89	92
Penicillium sp. MAM-F2	720	148	108
Aspergillus niger (MAM-F3)	680	148	70
Aspergillus sp. (MAM-F4)	620	87	88
Aspergillus niger (MAM-F5)	1050	46	77
Aspergillus sp. (MAM-F6)	680	1o2	81
Penicillium sp. (MAM-F8)	880	122	75
Pencillium sp. (MAM-F9)	900	72	88
Aspergillus niger (MAM-F12)	700	96	67
Aspergillus niger (MAM-F13)	240	157	93
Penicillium sp. (MAM-F14)	290	80	42
Pencillium sp. (MAM-F15)	910	119	63
Aspergillus sp. (MAM-F16)	720	85	17
Aspergillus sp. (MAM-F17)	1130	119	8
Fusarium sp. (MAM-F18)	1100	135	14
Fusarsium sp. (MAM-F19)	1120	157	14
Asp. niger (MAM-F20)	850	156	11
Fusarium sp. (MAM-F21)	680	102	92
Aspergillus sp. (MAM-F23)	1270	233	80
Aspergillus sp. (MAM-F24)	1170	39	8